HONG KONG MONETARY AUTHORITY
香 港 金 融 管 理 局

HALF-YEARLY MONETARY AND FINANCIAL STABILITY REPORT

March 2013

This Report reviews statistical information between the end of August 2012 and the end of February 2013.

Half-Yearly Monetary and Financial Stability Report
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1. Summary and overview

Higher demand for Hong Kong dollar assets led to repeated triggering of the strong-side Convertibility Undertaking (CU) in the fourth quarter of 2012. In the face of such inflow pressures, the Hong Kong dollar exchange market functioned normally and the Linked Exchange Rate system continued to enjoy a high degree of market credibility.

Risks to financial stability posed by property market volatility have continued to mount. Macroprudential policies have leaned against the build-up of leverage, but expectations of property price movements could be reversed abruptly by unforeseen events. Participants in the Hong Kong financial system should brace themselves for the potential volatilities of the current financial cycle.

The external environment

Global financial conditions have improved significantly over the past six months, driven by reduced tail risks in the US and Europe, more aggressive monetary policy easing in the advanced economies, as well as a revival of the growth momentum in Mainland China. In Europe, the announcement of a new bond purchase programme known as the Outright Monetary Transactions (OMTs) by the European Central Bank (ECB) in September 2012 has helped reduce the tail risk of the European sovereign debt crisis. In the US, the US Federal Reserve has pursued unlimited quantitative easing and has explicitly linked its forward interest rate guidance to the inflation and unemployment rates. In Japan, the new Abe government also announced more aggressive monetary easing and fiscal stimulus package. That said, downside risks to growth in the advanced economies and global financial stability remain. While the temporary extension of the debt ceiling deadline in the US helps avoid an imminent political stand-off, fiscal uncertainty will continue to cloud the US economic prospects. In Europe, household, bank and sovereign balance sheet stresses would continue to drag on growth. Meanwhile, the sharp depreciation of the Japanese yen and the pound sterling on expectations of more aggressive monetary policy moves reignites concerns about currency volatilities.

Amid the stabilisation of the external environment, growth momentum in East Asian emerging economies, including Mainland China, recovered in the last quarter of 2012, after registering a general downward cycle in the previous quarters. Inflationary pressures remained contained. In Mainland China, there have been concerns that the decline in working age population would push up wages and inflation. Box 1 discusses the extent to which changing demographics and labour market tightness have affected labour costs in Mainland China. Meanwhile, the latest round of monetary easing in major advanced economies has generated some capital inflow pressures for most East Asian economies. Regional currencies have generally appreciated against the US dollar since late August 2012, but the appreciation pressures appeared to have eased recently.

The domestic economy

In Hong Kong, growth momentum picked up gradually during the second half of 2012 along with some stabilisation in the merchandise trade performance. Domestic demand strengthened on a broad base, led by robust growth in private consumption and fixed investment. This lifted real GDP growth to a sequential 0.8% in the third quarter and 1.2% in the fourth quarter. For 2012 as a whole, however, growth slowed to a below-trend rate of 1.4% from 4.9% in 2011. Box 2 analyses the deterioration in Hong Kong's current account balance and argues that such developments warrant close monitoring as they may be symptoms of financial imbalances.

The labour market remained tight on the back of an improving economy. The seasonally adjusted three-month moving-average unemployment rate continued to stay at a low level of about 3.3% over the past six months, while total employment increased to a historical high of 3.71 million in January. With growth momentum picking up, the output gap was also estimated to have largely closed in the fourth quarter of 2012.

Local inflation also rose along with the improvement in the local economic environment. On an annualised three-month-on-three-month basis, the underlying inflation rate increased steadily to 4.7% in December 2012 from 1.6% in August, with all major CCPI components, including rental, tradables and services, registering some increases in momentum during the period. Looking ahead, the inflation momentum is expected to remain steady as the fragile global economic environment is expected to help contain commodity price pressures. However, there is the chance that inflationary pressures may pick up to higher-than-expected levels, particularly if the local property market were more buoyant than expected.

The Hong Kong economy is expected to grow faster at a close-to-trend rate in 2013. The drags from external demand should subside gradually, but a full recovery in exports will still take some time as the global economy is struggling to achieve sustained growth. Domestically, consumer spending should continue to lend support to growth in real activity, and large-scale infrastructure works and private building activity are expected to hold up quite well. Overall for 2013, private sector analysts project the economy to grow by 2.5-4.7%, averaging at around 3.5%. The Government also sees growth strengthening to the range of 1.5-3.5%.

Monetary conditions and capital flows

The Hong Kong dollar exchange rate strengthened and stayed close to 7.75 during the second half of 2012, and then softened slightly in early 2013. The strong-side CU was triggered repeatedly in the fourth quarter of 2012, which led to the purchase of US dollars of $13.8 billion and the sale of Hong Kong dollars of $107.2 billion by the HKMA. This inflow of funds partly reflected increased allocation to Hong Kong dollar assets by overseas investors, as well as the proceeds from issuance of foreign currency bonds by Hong Kong firms in exchange for Hong Kong dollars. The stronger equity initial public offerings (IPO) activities in late November and December also to some extent supported the inflows. In the face of inflow pressures, the Hong Kong dollar exchange market has functioned normally. Box 3 assesses the recent performance of the Hong Kong dollar exchange market and argues that the Linked Exchange Rate system has continued to enjoy a high degree of market credibility.

The low interest rate environment has continued. In the money market, the interbank rates stayed low, with the overnight and three-month HIBOR fixings hovering around 0.10% and 0.40% respectively. For maturities beyond

three months, the interbank rates edged down slightly along with the LIBOR counterparts. The yield curve of Exchange Fund papers shifted down in the second half of 2012, partly reflecting increases in banks' demand for high-quality Hong Kong dollar assets. But it has steepened slightly in early 2013 amid larger increases in long-dated yields. The average cost of funds for retail banks, as reflected by the composite interest rate, has declined slightly as a result of easing deposit interest rates. Mortgage interest rates also edged down. In mid-March, however, a few leading banks raised the mortgage interest rates by 25 basis points, reportedly in response to higher funding costs.

As a result of repeated triggering of the strong-side CU in the fourth quarter of 2012, the Aggregate Balance and hence the Monetary Base increased appreciably. In early 2013, additional Exchange Fund papers were issued to meet the strong demand by banks for liquidity management. Against this background, the Hong Kong dollar monetary aggregates showed much faster increase in the second half of 2012. For the whole year, the Hong Kong dollar narrow money supply rose by 15.8% and the broad money supply by 12.1%. Meanwhile, Hong Kong dollar deposits increased by 11.7% in 2012 as a whole, compared with a modest annualised 3.8% increase in the first half.

On the credit side, total loan growth slowed visibly to 9.6% in 2012 from 20.2% in the previous year, along with the slowdown in the domestic economy and in part reflecting the impact of prudential measures by the HKMA. But compared with the first half, there was a slight acceleration in loan growth towards the year end led by Hong Kong dollar loans and loans for domestic use, although growth remained modest at 5.5% and 7.3% respectively for the whole year. Foreign currency loans and loans for non-domestic use saw growth decelerating throughout the year to around 16%. Going forward, credit demand is expected to increase in the near term amid signs of improvement in the domestic economy. The latest HKMA Opinion Survey on Credit Condition Outlook also points to stronger credit demand in the period ahead.

Renminbi loans extended by banks in Hong Kong surged by 156.6% from a year ago to RMB79.0 billion at the end of 2012. As a result, banks' renminbi assets have become more diversified. On the liability side, the funding structure of banks' renminbi business has continued to evolve. Banks were increasingly issuing renminbi certificates of deposits (CDs) as a means to tap renminbi funds in the first half of 2012, although such tendency moderated somewhat in the second half of the year. For 2012 as a whole, outstanding CDs surged by 60.5% to RMB117.3 billion while customer deposits increased by 2.5% to RMB603.0 billion. The latter represented 9.1% of total deposits in Hong Kong's banking system. Box 4 provides a preliminary analysis of the determinants to the growth in outstanding renminbi deposits. This helps provide further insights on the development of offshore renminbi liquidity.

Asset markets

The local stock market rebounded following last summer in view of a brighter outlook for global financial markets. Financial conditions stabilised as the Fed and ECB introduced another round of monetary easing measures, while more signs emerged that the Mainland economy was about to bottom out. Except for a brief period towards the end of last year in which concerns over the US economy heading for a "fiscal cliff" pulled investors back to the sideline, the overall sentiment has been bullish in the past six months. Looking ahead, however, the most fundamental fiscal issues remain unresolved in the US and Europe, and noise from political

wrestling could now and then hit a nerve. Geopolitical tensions arising from the nuclear testing in North Korea and the sovereign border disputes in East Asia could also potentially unsettle equities.

The debt market has registered fast growth, with private sector debt issuance increasing particularly strongly. Last year saw the corporate sector tap the bond market much more aggressively than before. While Hong Kong dollar debt issued by local corporates declined slightly, debt issued in other currencies experienced phenomenal growth with US dollar debt issuance more than doubling. The strong growth in the corporate bond market was attributed to a host of cyclical and structural factors, which are likely to continue to underpin the outlook in the period ahead. The renminbi debt market in Hong Kong also expanded steadily last year with a number of positive developments including an increasingly more diversified mix of issuers, longer maturity of debt issued and better credit quality of bonds.

Risks in the residential property market continue to be a major concern for macroeconomic and financial stability in Hong Kong. While the volume of property transactions has been volatile, flat prices increased notably by 25.2% in 2012 and more than doubled from the end of 2008. But with household income growing at a more gradual pace, flat prices could have run well ahead of the fundamentals, with many of the affordability indicators already flagging warning signals of overvaluation risks.

Going forward, improved market sentiment amid better growth outlook and more aggressive monetary easing in the advanced economies could further aggravate the misalignments between flat prices and the fundamentals. In view of this, the Government introduced further measures in February 2013 by doubling the ad valorem stamp duty rates for all properties.

The HKMA also announced a new round of prudential measures by imposing stricter stress testing requirements for mortgage lending, lowering the maximum loan-to-value (LTV) ratio for non-residential properties and introducing a risk weight floor of 15% for new residential mortgage lending by banks using the internal ratings-based approach.

Banking sector performance

Along with the general stabilisation of global financial market conditions and a more sanguine economic outlook, the local banking sector continued to record healthy growth. The sector's performance was characterised by steady credit expansion and favourable liquidity conditions. These positive developments took place despite continued deleveraging by euro area banks, as local and other foreign banks moved in to fill the void. With strong capital positions by international standards and sound asset quality, banks are well placed to meet the new capital requirements under the Basel III framework.

During the second half of 2012, the sector's profitability moderated from the very buoyant results of the first half, due to lower non-interest income, a rise in operating cost and higher net charges for provisions, which more than offset the increase in interest income. Nevertheless, the performance remained more favourable than the same period of 2011, with retail banks registering a pre-tax return on assets of 1.1%, compared with 1.24% in the first half, and just 1% in the second half of 2011. For 2012 as a whole, the aggregate pre-tax profits recorded an increase of 12.7%, with the average pre-tax return on assets rising to 1.16% from 1.1% in the previous year.

Liquidity conditions continued to be sound. As the growth of deposits outpaced credit expansion, the overall loan-to-deposit (LTD) ratio for all authorized institutions (AIs) went down notably to 67.1% in December 2012, from 69% in June 2012. Reflecting improved funding

conditions, average interest costs for the Hong Kong dollar and US dollar funding of licensed banks both declined across the board – for both deposits and market-based funding.

Looking ahead, while external headwinds have seemingly diminished, uncertainties regarding fiscal issues in the US and Europe would continue to cloud economic prospects. Another challenge regards the continued expansion of the sector's credit exposure to Mainland-related business, and banks should continue to be vigilant about the credit risk management on their Mainland-related exposure.

Domestically, the risk of a property-price bubble would continue to overshadow the banking system. Box 5 examines empirically the transmission mechanism of LTV policy and reveals that the sharp rise in property prices after the global financial crisis has led to significant increases in collateral values and thus credit supply, and the LTV cap tightening has partly offset such effect and reduced the risk of credit-asset price spirals.

The recent financial crisis has highlighted the important role of global banks in the transmission of shocks across banking sectors in different economies. Box 6 assesses how US and European banks have adjusted the business models of their Hong Kong branches after the 2008-09 global financial crisis, and implications for the shock transmissions.

The Half-yearly Report on Monetary and Financial Stability is prepared by the staff of the Research Department of the Hong Kong Monetary Authority.

2. Global setting and outlook

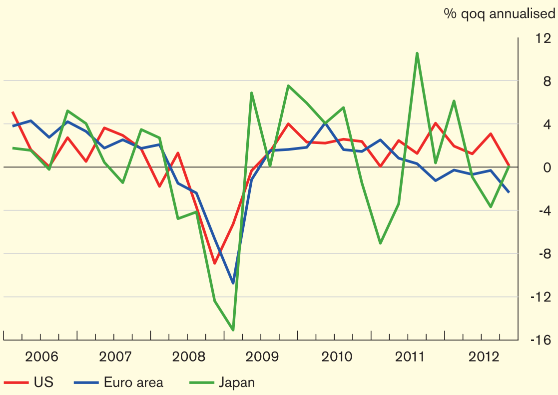
External environment

Tail risks in major advanced economies have diminished over the past six months but growth remained sluggish. Fiscal drag is set to play a more prominent role from 2013 onwards and the economic outlook is still subject to substantial policy uncertainties. Growth momentum in East Asian economies generally improved, and domestic demand will continue to support economic growth going forward.

2.1 Real activities

Tail risks in major advanced economies have receded over the past six months. Nevertheless, economic growth remained sluggish. Latest GDP figures show the US economy grew by 0.1% while the euro area and Japanese economies contracted by 2.3% and 0.2% respectively in the fourth quarter of 2012 (Chart 2.1).[1]

Chart 2.1
US, euro area and Japan: real GDP



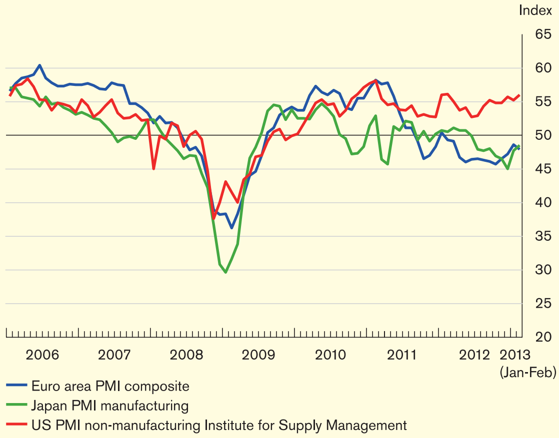
Sources: Bureau of Economic Analysis, Eurostat and Cabinet Office of Japan.

In Europe, the ECB's Outright Monetary Transactions (OMTs) programme, the rescue package for Spanish banks, further credit disbursement to Greece, and the establishment of the Single Supervisory Mechanism have all helped reduce the risks of a euro dissolution and stabilised financial markets. Nevertheless, with the necessary fiscal adjustment and structural reform starting to take hold, the euro area economy continued to deteriorate and recently entered into recession. Across the Atlantic, the "fiscal cliff" was averted but the US economy maintained only a moderate recovery, though there were some notable improvements in the housing market. In Japan, growth weakened sharply in the second half of 2012, amid a slump in exports and subdued private sector demand. The latest Purchasing Managers' Indices (PMI) indicate that growth will likely continue at a

[1] For the US, euro area, Japan, and non-Japan Asia (excluding Mainland China), quarterly real GDP percentage changes are on a seasonally adjusted annualised basis, unless otherwise stated.

moderate pace in the US while the euro area and Japan could see continued contraction (Chart 2.2).

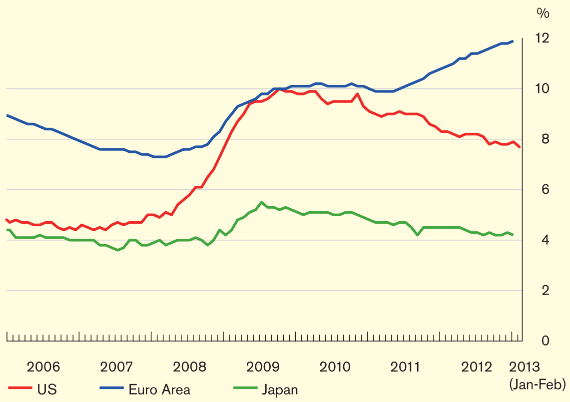
Chart 2.2
US, euro area and Japan: Purchasing Managers' Indices



Source: Bloomberg.

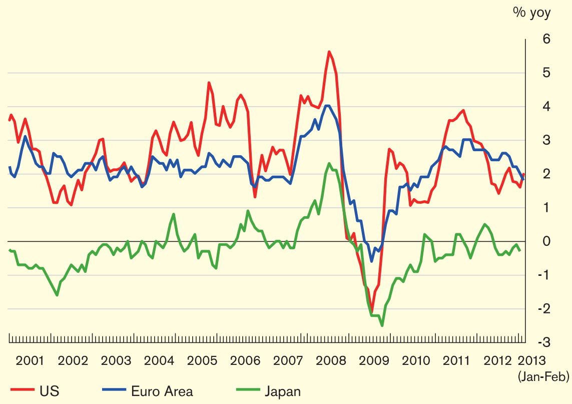
As a result of sluggish growth, the pace of job creation remained slow with labour market conditions worsening in Europe. The unemployment rate stayed at stubbornly high levels of around 7.7% in the US, hitting 11.9% in the euro area, and 4.2% in Japan (Chart 2.3). The high degree of economic slackness, together with the continued fall in energy prices, has kept headline CPI inflation down in the advanced economies with core inflation likely to remain subdued in 2013 (Chart 2.4).

Chart 2.3
US, euro area and Japan: unemployment rate



Source: Bloomberg.

Chart 2.4
US, euro area and Japan: headline inflation



Sources: US Department of Labour, Eurostat and Japan Ministry of Internal Affairs.

Policymakers on both sides of the Atlantic have so far prevented tail risk events from happening. However, economic outlook is still subject to substantial policy uncertainties going forward. In Europe, the inconclusive election result in Italy continues to cast doubts over the country's resolve to push through necessary reforms, while the upcoming election in Germany may also affect the country's stance on euro area reforms. Meanwhile, the ECB's new bond purchase programme, OMTs, could eventually be forced into action and there is a risk that it may fail to live up to market expectations. In the US, while the Congress have averted the "fiscal cliff" and extended the debt-ceiling until mid-May, huge political differences over spending cuts mean fiscal uncertainties could drag on for some time with front-loaded cuts and government shutdowns being two major threats to the recovery. In any case, the scheduled rise in both income and payroll tax will reduce households' disposable income and pose headwind on US growth in 2013. In response to weak economic outlook and persistently high unemployment, the Fed and the Bank of Japan (BoJ) have recently announced open-ended quantitative easing programmes. While it is uncertain if unlimited quantitative easing can boost growth and employment, the policy has now increased the risks of currency volatilities and also complicated the timing of policy exits.

Growth momentum in most East Asian economies strengthened in the last quarter of 2012 following a general downward cycle in the previous quarters (Table 2.A). Domestic demand, particularly private consumption, continued to be the major driver of growth. External demand improved somewhat in a few economies, but remained a drag on growth for the region as a whole. Inflationary pressures eased, with average CPI inflation rate declining to 2.6% year on year in January 2013 from 3.0% in June 2012. Some central banks cut their policy rates in October 2012,[2] but, given the recovery in growth momentum, policy rates have been unchanged in the whole region in recent months.

Table 2.A
Asia: real GDP growth

(% qoq, annualised)	2011 Q3	2011 Q4	2012 Q1	2012 Q2	2012 Q3	2012 Q4
NIE-3: [1]	**2.0**	**-1.0**	**4.4**	**0.6**	**0.9**	**3.5**
Korea	3.4	1.3	3.5	1.1	0.2	1.5
Singapore	2.0	-2.3	7.8	0.1	-4.6	3.3
Taiwan	-0.5	-4.6	5.0	-0.1	3.9	7.3
ASEAN-4: [1]	**6.3**	**-3.2**	**16.5**	**7.4**	**5.4**	**9.3**
Indonesia [2]	6.0	7.5	5.5	6.4	5.4	7.0
Malaysia [2]	5.6	4.6	6.8	5.3	4.7	8.9
Philippines	2.2	7.0	11.2	4.4	5.2	7.5
Thailand	10.1	-35.9	48.0	13.0	6.1	15.0
East Asia: [1]	**4.1**	**-2.1**	**10.3**	**3.9**	**3.1**	**6.3**

Notes:
1. Weighted average (weighted by contribution to world GDP value at Purchasing Power Parity).
2. Seasonal adjustment made by HKMA staff.

Sources: International Monetary Fund (IMF), CEIC and HKMA staff estimates.

The latest round of monetary easing in major advanced economies has generated some capital inflow pressures for East Asia. Most regional currencies have been strengthening against the US dollar since late August 2012, but the appreciation pressures appeared to have eased recently (Table 2.B). The performance of most stock markets in the region has improved over the past six months, while the long-term sovereign bonds yield spreads over US Treasury declined as demand for bonds in the region increased. Central banks in the region have generally been accumulating foreign exchange reserves, while some have taken steps to limit banks' currency forward position in an effort to restrain currency speculation.[3] Looking ahead, capital inflow pressure would continue amid ample global liquidity and better growth prospects relative to major economies.

Table 2.B
Asia: changes in major financial market indicators and foreign reserves between 22 August 2012 and 11 March 2013 [1]

	Exchange rates against USD (%)	FX reserves [2] (US$ bn)	Equities (%)	Change in yield spreads (basis points) [3]
NIE-3:				
Korea	3.7	13.0	3.5	-59.6
Singapore	-0.1	15.0	8.0	-21.3
Taiwan	1.0	13.0	7.2	-41.8
ASEAN-4:				
Indonesia	-2.0	-1.4	16.7	-87.2
Malaysia	0.3	5.9	0.3	-51.3
Philippines	3.9	4.1	32.3	-235.7
Thailand	5.3	3.9	27.8	-28.3

Notes:
1. Expectations of further easing by the US Federal Reserve increased sharply after the release of August Federal Open Market Committee minutes on 22 August.
2. Calculated using monthly data from the end of July 2012 to the end of February 2013.
3. Changes in yield spreads between 10-year sovereign bonds and the US Treasury.

Sources: CEIC, Bloomberg and HKMA staff calculations.

The economic outlook for the region should remain positive in the near term. Weaknesses in the advanced economies would continue to weigh on export growth in the region, but the recovery in Mainland China would support intra-regional trade. Consumption is expected to be resilient amid tight labour market conditions, and infrastructure investment would remain strong in some East Asian economies (for instance, Indonesia and Malaysia). Meanwhile, monetary conditions should stay supportive

2 The central banks in Korea, Thailand and the Philippines cut their respective policy interest rates by 25 basis points in October 2012.

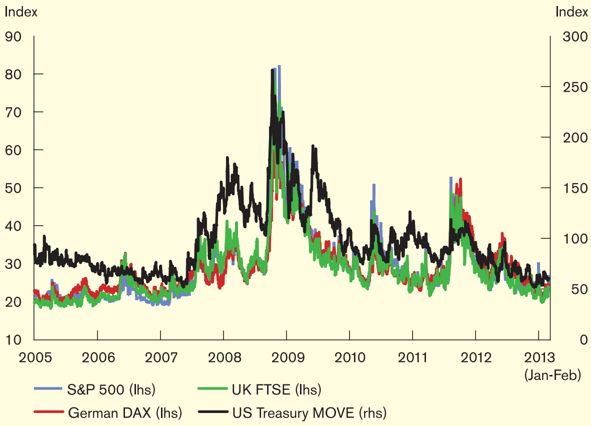
3 Authorities in Korea and the Philippines announced measures to cap currency forward positions held by banks.

of growth amid continued monetary easing in major advanced economies and the stabilisation of deleveraging by European banks. Accordingly, risks to inflation appear to be tilted towards upside, particularly if global commodity prices strengthen along with a stabilisation of global conditions. The latest consensus forecasts project the region's GDP to grow by 4.4% as a whole in 2013, compared with 3.9% in 2012, while inflation rate would increase to 3.2% from 3.0%.

2.2 Global financial conditions

Global financial conditions have improved significantly in the past six months, driven by extraordinary accommodative monetary policy from central banks in the developed countries and reduced tail risks in the US and Europe. These positive developments have given a strong boost to investor sentiment, triggering large capital flows into risky assets. Equity markets rallied strongly around the world, with implied volatilities falling to their lowest levels since the onset of the global financial crisis (Chart 2.5).[4]

Chart 2.5
Equity and bond market option implied volatility indices

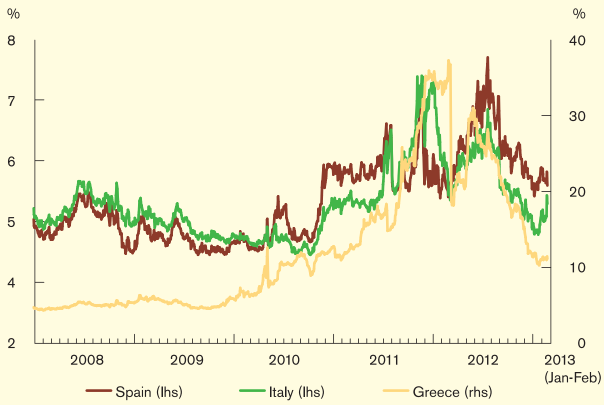


Source: Bloomberg.

Developments in the euro area continued to be a major source of financial market volatility. Earlier fears that Greece would need to undergo another debt restructuring were laid to rest, after the troika approved the disbursement of rescue aid on condition that the Government would step up efforts on fiscal austerity. The aversion of a debt default and an immediate exit from the euro area brought relief to the market, prompting a substantial fall in Greek bond yields. However, despite the near-term improvement, concerns about the country's long-run debt sustainability remain.

In addition to Greece, Spain and Italy also came under pressure throughout much of last year, as concerns about their fiscal positions and troubled banks intensified. These fears were later contained by the actions of the ECB, with President Draghi pledging to "do whatever it can to save the euro", followed by the introduction of the OMTs programme. The move marked a major turning point in the peripheral bond markets, with renewed capital inflows driving bond yields substantially lower (Chart 2.6).

Chart 2.6
Ten-year sovereign bond yields of selected peripheral European countries



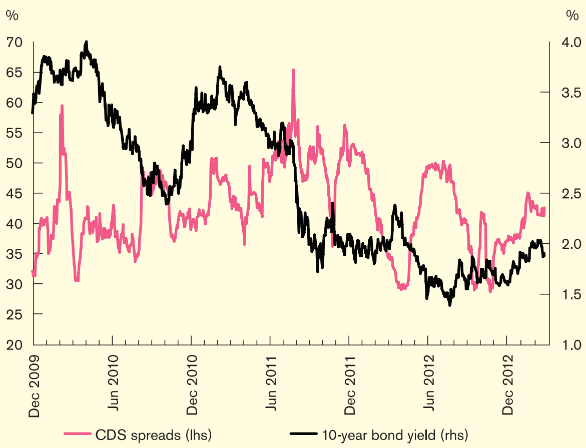
Source: Bloomberg.

[4] The US Treasury MOVE, compiled by Merrill Lynch, is the weighted average of implied volatilities of one-month options on 2-year, 5-year, 10-year, 30-year Treasury Bonds with weights 0.2, 0.2, 0.4 and 0.2 respectively.

However, the banking system in Europe continues to be a stumbling block, as banks are still highly leveraged and inadequately capitalised. Constrained by poor balance sheets, banks have been reluctant to lend to the real economy, taking a toll on any potential recovery.

Outside Europe, the threat of the "fiscal cliff" to the US economy was a major focus of financial markets during the fourth quarter. The subsequent aversion of a potential fiscal crisis, albeit only temporary, was a significant confidence booster for investors, with the risk of the worst-case scenario removed. Global financial markets were given a shot in the arm, with investors rushing from the sideline and risk appetite increasing. However, from a policy perspective, the fiscal situation remains a significant concern and fiscal risks continue to loom large (Chart 2.7).

Chart 2.7
US sovereign credit default swap spreads and 10-year bond yields

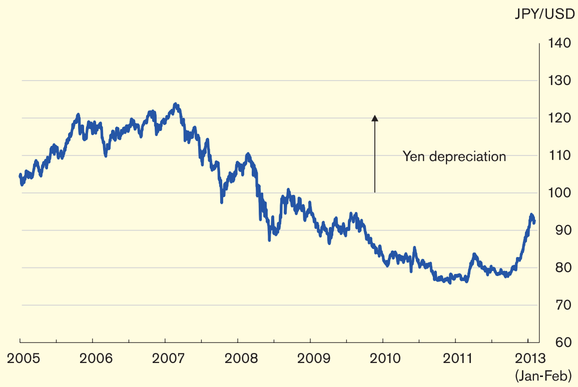


Source: Bloomberg.

On the monetary side, the Fed stepped up its quantitative easing programme in the fourth quarter, and assured the market that interest rates would be kept low "as long as the unemployment rate remains above 6.5%" and "inflation expectations continue to be well anchored.[5]" However, concerns seem to be emerging over the potential long-term negative consequences of the extraordinary accommodative monetary policy, as reflected in the sentiment of the recent FOMC meetings.

In Asia, proposed policy changes by the BoJ have caused significant market reaction since last November. The Japanese yen has fallen around 15% to a 2½ year low in response to the threat of unlimited quantitative easing and an increase to the BoJ's inflation target to 2% (Chart 2.8). With unconventional monetary policies pursued by central banks in the developed countries spreading far and wide, the amount of liquidity in the global financial system has reached unprecedented levels. How this liquidity is managed and eventually unwound will have significant implications for the global economy and financial markets.

Chart 2.8
Japanese yen vis-avis US dollar



Source: Bloomberg.

[5] See the US Federal Reserve press release on the FOMC meeting issued on 12 December 2012.

Mainland China

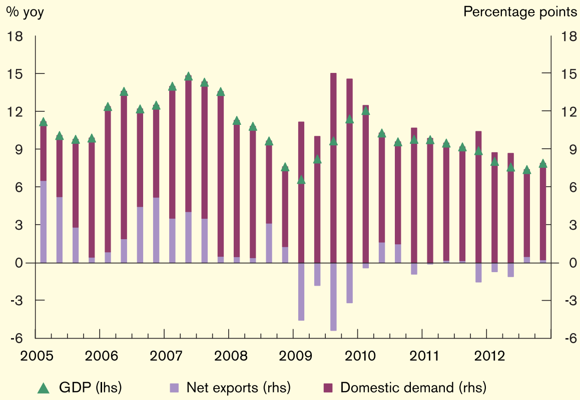
Growth of the Mainland economy has stabilised and shown signs of a pick-up since the last quarter of 2012. Partly reflecting robust expansion in non-bank financing activities, monetary conditions eased, while property markets continued to improve. The banking sector achieved solid profit growth, but still faces pressures on asset quality. Looking ahead, growth momentum is expected to improve further, with risks to inflation being tilted towards the upside accordingly.

2.3 Output growth and inflation

Growth in the Mainland economy stabilised in the last quarter of 2012, with real GDP increasing by 7.9% year on year, compared with 7.4% in the previous quarter (Chart 2.9). Domestic demand strengthened amid continued policy support and solid income growth. In particular, infrastructure investment remained strong, and real estate investment activity picked up in the latter part of the year along with the recovery in the property markets. Exports also improved, especially to emerging Asia, while the trade balance increased as a share of GDP accordingly.[6]

Growth momentum may continue to improve in the near term. Export growth is expected to remain modest along with the weak recovery of major advanced economies, but domestic demand could gain momentum on the back of proactive fiscal policy stance, improvement in business sentiment, as well as the initiatives by the authorities to promote household consumption. On the other hand, economic growth is not likely to see a sharp acceleration as the Government has reiterated its commitment to avoid any big economic stimulus to prevent a resurgence of overheating risks, particularly in the property markets. The consensus forecasts in March project GDP growth to rise to 8.2% in 2013 from 7.8% in 2012.

Chart 2.9
Mainland China: contributions by domestic demand and net exports to GDP growth



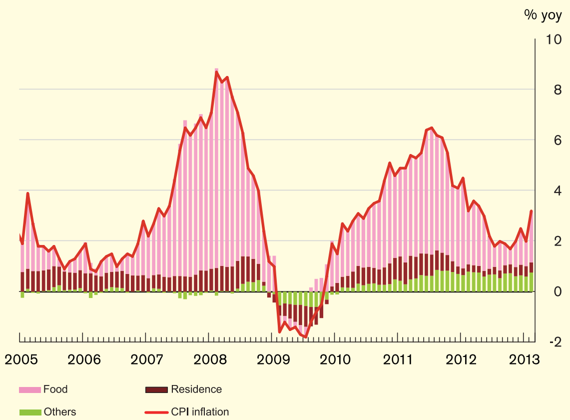
Sources: CEIC and HKMA staff estimates.

Inflationary pressures remained contained over the review period, but could increase somewhat going forward. Headline CPI inflation rate stayed around 2.0% year on year most of the time and then rose to 3.2% in February 2013 due partly to the Lunar New Year holiday effect

[6] The trade surplus rose to 3.4% of GDP in the second half of 2012 from 2.0% of GDP in the first half.

(Chart 2.10), while producer prices declined at a decelerated pace amid improvement in growth momentum. Continued quantitative easing in major advanced economies would support global commodity prices and raise China's import prices, particularly if global conditions turn out to be stronger than envisaged. The strengthening economic outlook and further reforms of resource prices at home may add some upward pressures to domestic costs. However, as the economy is expected to grow at a rate that is not far from the trend, inflationary pressures should not rise sharply. There have been concerns among investors that the decline in working age population would push up wages and add to inflationary pressures. Our analysis shows that the overall impact of labour market development on labour costs and employment has been limited, although some enterprises in the coastal areas have been affected (see Box 1 for more discussions). The latest consensus forecasts suggest that the headline CPI inflation rate could increase to 3.2% in 2013 from 2.6% in 2012.

Chart 2.10
Mainland China: contributions to CPI inflation



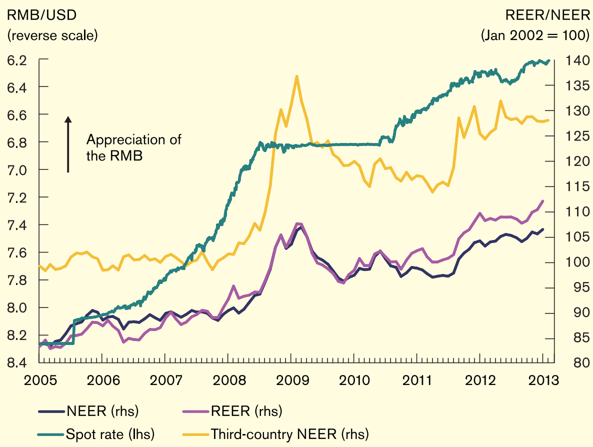
Sources: CEIC and HKMA staff estimates.

2.4 *Monetary conditions, asset markets and banking risks*

There appeared to be net capital outflows from the Mainland in the second half of 2012. Changes in official reserves netting out the trade balance, foreign direct investment and valuation effect were still negative in the fourth quarter of 2012, reflecting mainly bank-related capital outflows resulting from the unwinding of banks' liability position, while net portfolio flows were largely balanced. Capital outflow pressures showed signs of easing recently, and capital flow pressures could become more balanced going forward, along with the strengthening growth momentum on the Mainland, a drop in risk aversion and continued monetary easing in major advanced economies.

The renminbi remained strong in effective terms, and reversed the weakening momentum against the US dollar in the third quarter, partly reflecting eased concerns about the slowdown in the Mainland economy. The RMB/USD exchange rate has appreciated by around 2% on a cumulative basis since mid-August (Chart 2.11). Looking ahead, the renminbi is expected to stay firm against the US dollar, and consensus forecasts in March project the RMB/USD exchange rate to appreciate by about 1% in 12 months.

Chart 2.11
Mainland China: the renminbi exchange rates

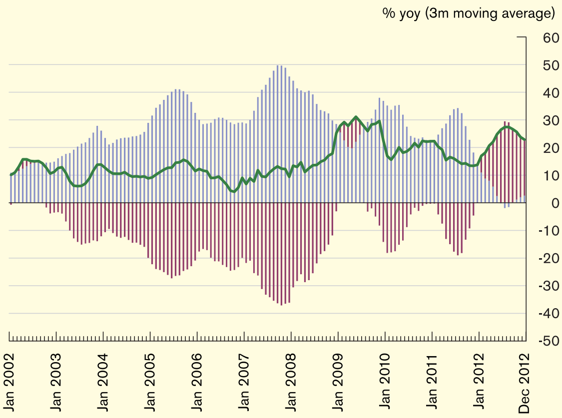


Note: A higher effective exchange rate index indicates a stronger renminbi. The third-country nominal effective exchange rate (NEER) takes into account the competition that China faces in foreign markets from other economies which export similar products. The methodology of constructing the third-country effective exchange rate is presented in Box 2 of the December 2006 issue of this report.

Sources: Bank for International Settlements, Bloomberg, CEIC and HKMA staff estimates.

The People's Bank of China (PBoC) maintained a largely pro-growth policy stance over the review period. Both benchmark interest rates and reserve requirement ratio were unchanged, whereas the growth of reserve money has stayed high by historical standards (Chart 2.12). Specifically, the contribution from net foreign assets remained low, but that from net domestic assets stayed solid. The PBoC has also continued to use the reverse repos actively to stabilise short-term inter-bank liquidity. In January 2013, the PBoC introduced the Short-term Liquidity Operations so that it can conduct open market operations on a daily basis. This increased the flexibility for the central bank to adjust liquidity in the financial system and would help smooth short-term interbank rates.

Chart 2.12
Mainland China: contributions to reserve money growth

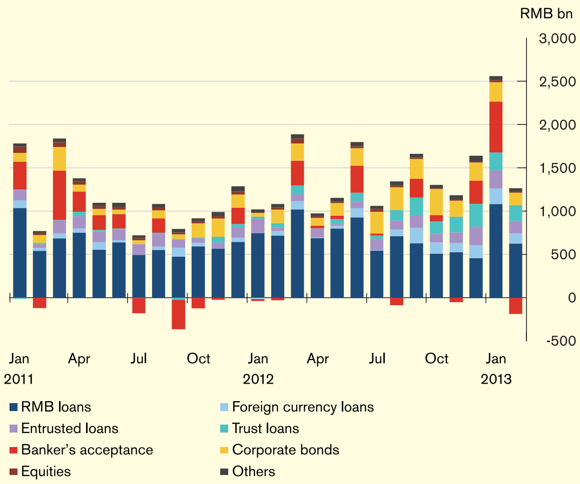


Note: Total reserve money is adjusted for the changes in the reserve requirement ratio.
Sources: CEIC and HKMA staff estimates.

Overall monetary conditions appear to have eased in recent months. Formal bank lending edged down year on year and new medium- and long-term loans also declined remarkably as a share of total new loans towards the end of the year, but total social financing, which covers part of the shadow banking activities, increased at a robust pace (Chart 2.13). Specifically, new trust loans, most of which were used to finance infrastructure and industrial and commercial enterprises, have grown by multiple times in the second half of 2012 from a year ago, while corporate bond financing doubled over the same period.

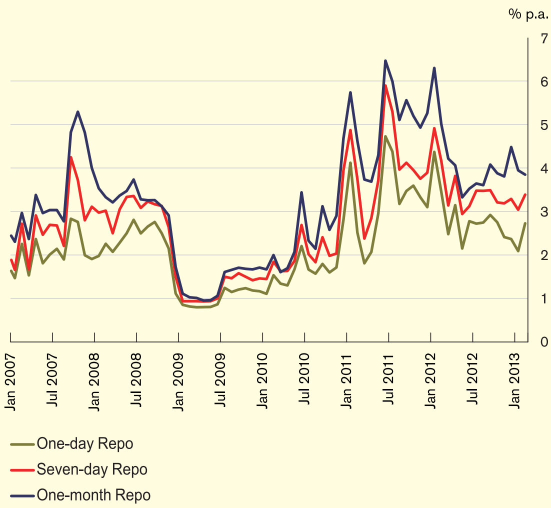
In addition, market interest rates generally stayed close to their medium-term levels (Chart 2.14), and corporate bond yields remained largely stable. Financing difficulties of private enterprises might have eased as well. For instance, private lending rates in Wenzhou have trended downwards in recent months.

Chart 2.13
Mainland China: total social financing



Source: CEIC.

Chart 2.14
Mainland China: money market rates

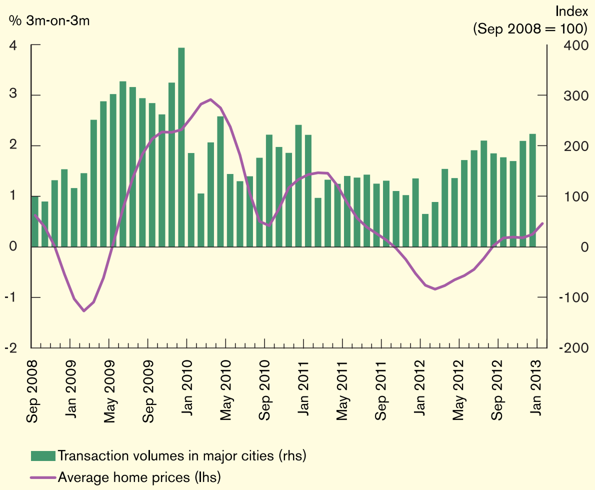


Sources: CEIC and WIND.

Equity markets reversed the downward trend towards the end of the year, partly reflecting a rise in investor confidence in the Mainland economic outlook. The price-to-earnings ratio of Shanghai A shares rose from an historical low of 10.6 in early December 2012 to 12.6 in mid-March 2013.[7] Going forward, the generally improving prospect of corporate profitability could continue to support market sentiment.

The housing markets have recovered further in the past few months. Property prices in most cities have been rising since September 2012, while property transaction volumes remained robust (Chart 2.15). The recovery was due mainly to the free-up of underlying demand supported by continued fine-tuning of property-related policies as well as improvement in market sentiment.

Chart 2.15
Mainland China: house prices and sales



Notes:
1. The transaction volume index is constructed based on the number of units sold in each month in Beijing, Shanghai, Hangzhou, Guangzhou, Shenzhen, Tianjin, Nanjing, Fuzhou, Xiamen and Ningbo.
2. Average home prices are the simple average of the price indices for 70 major cities.

Sources: CEIC, WIND and HKMA staff estimates.

The prospects for the Mainland housing markets should remain positive in the near term. Housing affordability has improved along with solid income growth, while the strengthening economic growth momentum and the Government's promotion of urbanisation in the coming years would continue to underpin market sentiment. Our analysis shows that house inventories in the big cities continued to decline over the review period, while major developers' financial conditions have improved along with an increase in sales revenues. This suggests the incentives for developers to cut prices have generally weakened. That said, property prices are not expected to see a sharp increase, given the gradual economic recovery, as well as the Government's determination to maintain administrative controls to ensure healthy development of the real estate sector.

The banking sector remained stable over the past few months. Commercial banks achieved impressive profit growth in the second half of the year despite the slowing economic growth.[8] It has been reported that some areas have seen a visible increase in bad loans, but the aggregate non-performing loan (NPL) ratio remained low at 0.95% in the fourth quarter. The weighted capital adequacy ratio was still high in the fourth quarter (13%), while commercial banks' loan loss reserves remained about 3.0 times of bad loans on average at the end of December 2012. Market sentiment about the banking industry showed signs of improving, with the price-to-book ratio of banks' shares increasing to 1.3 in early March 2013 from around 1 in early December 2012.

[7] This was still much lower than the past ten-year average of around 30.

[8] Our calculation based on the China Banking Regulatory Commission data suggests commercial banks' net profit growth was 14.3% year on year in the second half of 2012, compared with 23.3% in the first half.

However, concerns over the banking sector's profitability and asset quality may not ease significantly in the near term. The recovering property markets and the authorities' active management of lending to local government financing vehicles have reduced pressures on banks' asset quality. On the other hand, some small- and medium-sized enterprises and those sectors with substantial overcapacity (for instance, steel industry) may still have difficulty in repaying loans. Indeed, the NPL ratio in Wenzhou, where a large number of small enterprises are located, rose to 3.4% in November 2012 from 2.7% in June.

The rapidly expanding shadow banking system also posed uncertainty to the banking sector's asset quality and profitability. There is not yet a consensus on the definition of shadow banking, but according to most commentators of the Mainland economy, it mainly consists of banks' off-balance sheet financing activities, non-bank financial institutions' (for instance, trust companies) financing activities, and informal lending activities. There is much uncertainty over the size of shadow banking in Mainland China, but most estimates suggest it should be relatively much smaller than in major economies.[9] Moreover, part of the shadow banking activity is incentivised by the remaining interest rate controls in the banking system and is therefore not entirely negative or risky. In general, products that offer very high interest rates are likely to be more problematic than those whose yields are only a few percentage points higher than benechmark deposit rates, and the former does not appear to be a large part of bank-related activities. That said, the close yet opaque relationship between shadow banking and regular banking activities has raised concerns over its potential impact on financial stability, particularly given that some sectors financed through shadow banking still face headwinds in profit growth, and there may be a significant amount of maturity transformation and therefore liquidity risks built in such activities. Reflecting these concerns, the regulatory authorities on the Mainland have stepped up their supervision of shadow banking activities.

[9] See *Global Shadow Banking Monitoring Report 2012*, Financial Stability Board.

Box 1
How did labour market development affect labour costs in Mainland China?[10]

Labour markets in Mainland China have experienced some remarkable changes in recent years. First, working-age population (15-59 years old) started to decline in 2012 according to the National Bureau of Statistics. Secondly, it has been reported that there has emerged a shortage of "migrant workers" in coastal areas in recent years, while minimum wages have risen at a fast pace.

As labour market development matters for an economy's growth and inflation, this article first studies the extent to which labour market tightness has affected labour costs on the Mainland. It then explores the impact of changes in migrant labour forces on labour costs and employment in East China (Bohai gulf, Jiangsu-Zhejiang-Shanghai and Fujian-Guangdong-Hainan). Policy implications are also discussed accordingly.

Our research shows that the overall impact of labour market development on labour costs and employment has been limited, although Hong Kong-Macau-Taiwan (HMT) firms and private enterprises have been affected, particularly in the coastal areas. This suggests China has not yet seen an absolute shortage of labour, but structural problems, such as skill-mismatch, do exist in the labour markets.

How did labour market tightness affect labour costs in China?

According to economic theory, labour costs are mainly determined by minimum wages, labour demand-to-supply ratio and other control variables such as output. While an increase in minimum wages could partly capture the growth in living costs and hence reflect workers' wage requirement, a rise in labour demand-to-supply ratio implies intensification in labour market tightness and would push up labour costs. We study the impact of these factors on labour costs using annual firm-level data of above-scale industrial firms from 2001-2008 across regions (East China, Central China, West China and Northeast China), technology levels and firm ownerships. Specifically, firms in each region are grouped as state-owned enterprise (SOEs), foreign firms, HMT firms and private firms.

Our estimates show that the impact of labour market tightness on labour costs has been limited at the aggregate level, but has been larger for some HMT and private firms. The t-statistic of the coefficient for the labour demand-to-supply ratio, which measures the importance of labour market tightness in explaining the changes in labour costs, has been insignificant for SOEs and foreign enterprises in all regions, but has been significant for HMT and private firms in some areas. Specifically, the short-term coefficient of labour demand-to-supply ratio is around 0.2 for HMT and private firms in East China, suggesting a rise in the labour demand-to-supply ratio by one percentage point would lead to a rise in real labour costs by 0.2% in the short run (Table B1.A).

Table B1.A
Short-term elasticity of labour costs with respect to labour market tightness in East China

	SOE	Foreign	HMT	Private
Coefficient	-0.04	-0.14	0.16**	0.23*
T-statistic	-0.33	-0.83	2.21	1.61

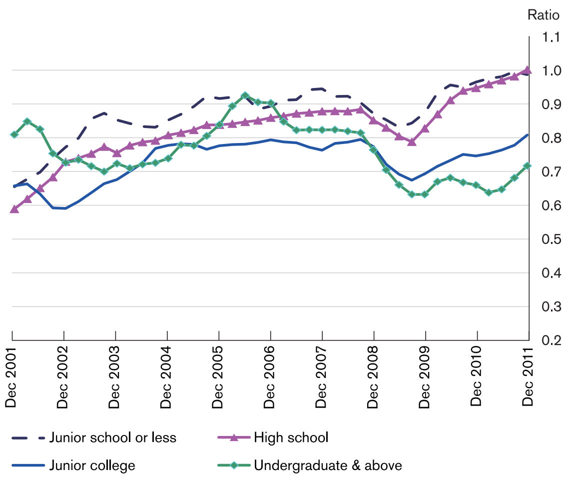
Note: * and ** denote statistical significance at 10% and 5% confidence levels respectively.
Sources: China Annual Survey of Industries and HKMA staff estimates.

10 This article is adapted from "How did labor market development affect labor costs in China?" by W. Zhang and G. Han (2013), Hong Kong Institute for Monetary Research Working Paper, forthcoming.

As to other regions, the coefficient is only significant for private firms in West China and HMT firms in Northeast China. Our research further shows the picture remains essentially unchanged from a longer-term perspective, with labour market tightness only affecting the labour costs of some HMT and private firms.

The estimates suggest that there has not yet emerged an absolute shortage of labour on the Mainland, but there are some sectoral issues. Specifically, there seems to be a negative relationship between market tightness and education level of labour forces. As shown in Chart B1.1, the urban demand-to-supply ratios for labour forces with lower education (high school and junior school or less) have been trending upwards to close to unity in recent years, while those for higher-education groups (junior college, undergraduates and above) have been trendless over the whole sample period and stayed far below unity.

Chart B1.1
Labour demand-to-supply ratios by education



Sources: CEIC and HKMA staff estimates.

At the same time, there appears to be a shortage of skilled labour forces. China has been the “world-factory” and experienced a boom in construction in the past decades, while high-end industries and service sectors have developed at a slower pace. Demand for young skilled workers increased rapidly, but vocational training and technical school education have lagged much behind. On the other hand, enrolment of colleges has risen at a fast pace since mid-1990s, while the demand-to-supply ratio of college graduates has been far below unity, implying an over-supply of college graduates.

As most employees of HMT and private firms have been in the less educated group and, in many cases, young skilled workers, the above mentioned structural problems may explain why labour market tightness has had a larger impact on HMT and private firms’ labour costs than on other types of firms. As shown in Table B1.B, the 2004 data indicates that more than 60% of the staff of private and HMT firms had received education of junior school or less, while only around 50% of the staff for SOEs and foreign firms received similar level of education. On the other hand, 4-5% of staff for SOEs and foreign firms had received university education, while less than 2.5% of the staff for HMT and private firms had studied in college.

Table B1.B
Education distribution of staff across firm ownerships in 2004 (%)

	SOE	Foreign	HMT	Private
Junior school or less	49.4	52.5	61.4	64.1
High school	36.7	35.6	30.7	28.7
Junior college	9.9	7.3	5.5	5.2
University	4.0	4.6	2.4	1.9

Sources: China Annual Survey of Industries and HKMA staff estimates.

How did labour migration affect labour costs in East China?

While East China remains the major destination for migrant workers, it has been reported that there has emerged a shortage of labour forces in this area in recent years, and wages have risen at a fast pace. Against this backdrop, we also study the extent to which changes in migrant labour forces have affected labour costs and employment in East China.

Our analysis considers both direct and indirect impacts of labour migration on labour costs and employment in East China. A decline in labour migration into East China would reduce the supply of labour in this area, thus increasing the labour market tightness and pushing up wages accordingly. A rise in labour costs would weigh on labour demand and thus reduce labour market tightness, which would in turn dampen wage growth. Such a dynamic process would continue until the demand for and supply of labour reach a new equilibrium. As changes in wages would lead to a change in the relative demand for labour across firms and hence generate some second-round effects on wages and employment, our analysis also takes into account the indirect impact of labour migration that stems from labour substitution between different levels of technologies and between firm ownerships.

Our estimates show that the impact of labour migration on labour costs is negligible for SOEs and foreign firms in East China, but it has been larger for private and HMT firms. Specifically, a 10% fall in labour migration would raise the real labour costs by 0.9% for private firms and by 0.3% for HMT firms in the short run. Meanwhile, employment in private firms would fall by 0.9%, followed by a 0.6% fall in HMT firms and a 0.5% fall in SOEs and foreign firms (Table B1.C).

Table B1.C
Short-run impact of a 10% fall in labour migration on labour costs and employment in East China (%)

	SOE	Foreign	HMT	Private
Labour costs	0.0	0.0	0.3	0.9
Employment	-0.5	-0.5	-0.6	-0.9

Sources: China Annual Survey of Industries and HKMA staff estimates.

The long-term effects on labour costs are larger for HMT and private firms, with a 10% fall in labour migration leading to a 3.6% and 0.9% rise in real labour costs for private and HMT firms respectively, but the impact remains insignificant for SOEs and foreign firms. The long-term responses of employment to the shock would be four times those of the short run. Our analysis also suggests that it is difficult for employers to substitute labour forces across different levels of technology or across firm ownerships, but it is easy to substitute labour forces across regions given other things unchanged.

Discussions

The main implication from our research is that, the overall impact of labour market development on labour costs and employment has been limited. However, the impact has been more noticeable for HMT and private firms (particularly in coastal areas) which have had a larger demand for a young less educated labour force that is in tighter supply.

Although our research has been based on data of 2001-2008, major findings should still hold currently and even in the years ahead. As shown in Chart B1.1, while the market has become tight in recent years for less educated labour forces, the supply of better-educated labour forces is still much larger than demand. On the other hand, our results may reflect structural problems in the Mainland labour markets.

First of all, segmentation of rural and urban labour markets makes it difficult for rural labour forces to work in urban areas for long enough, thus increasing the tightness for labour markets of less educated groups and skilled workers. Despite the progress made in the past decade in deregulating labour markets, there still exist many institutional factors (for instance, limited access to social security networks and schooling facilities for children) that prevent rural labour forces from working in cities on a permanent basis. In fact, some research shows that migrant workers started to return home at the age of 25-35 to set up family and would not come back to urban areas afterwards.

Secondly, as mentioned earlier, mismatch between labour demand and supply appears to be serious. Specifically, while higher education is conducive to an economy's growth from a long-term perspective, there could be structural problems in the labour markets in the short run if the level of education attainment does not match the demand for labour.

As such, it is useful to remove the barriers to labour mobility and develop vocational education to reduce sectoral tightness in the Mainland labour markets. It is also important to upgrade industrial chain and develop service sectors to reduce demand and supply mismatch in the labour market.

3. Domestic economy

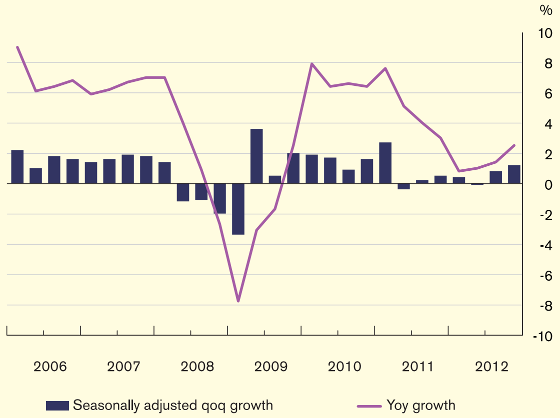
The Hong Kong economy grew faster in the second half of 2012 along with some stabilisation in the merchandise trade performance. The short-term outlook has improved, supported by solid domestic demand and improving exports. Inflationary pressures have only abated slowly and are likely to remain elevated as property rentals continue to rise apace.

The labour market remained tight, with the unemployment rate hovering at a low level. Hiring sentiment stayed strong, and its outlook is likely to be stable barring any major deterioration in the external environment.

3.1 Aggregate demand

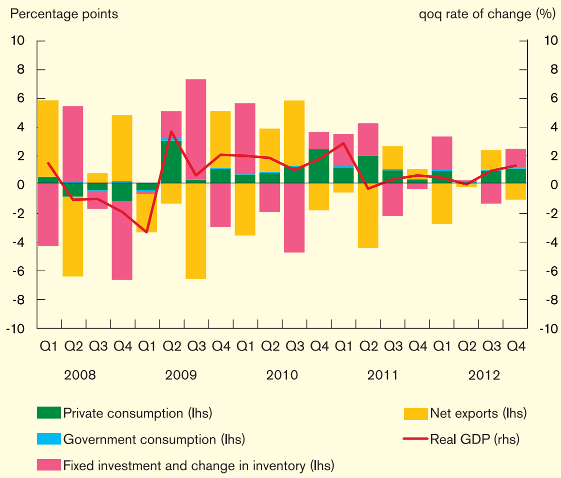
In Hong Kong, growth momentum picked up gradually in the second half of 2012. After contracting by 0.1% in the second quarter, real GDP rebounded by 0.8% in the third quarter and grew a further 1.2% in the fourth quarter (Chart 3.1). The pick-up in growth momentum was underpinned by stronger private consumption, which contributed 0.8 percentage points to real GDP growth in the third quarter and 1.0 percentage point in the fourth quarter (Chart 3.2). A revival in overall investment spending in the fourth quarter also gave extra impetus to real GDP growth. While Hong Kong's export performance improved visibly towards the end of the year, net exports turned into a drag in the fourth quarter as imports of goods and services recorded even stronger performance on the back of resilient domestic demand. In tandem with the sequential growth momentum, the year-on-year growth rate of real GDP ticked up to 2.5% in the fourth quarter from 1.4% in the third quarter. This lifted the annual real GDP growth to 1.4%, yet still sharply slower than the 4.9% growth in 2011.

Chart 3.1
GDP at constant market prices



Source: Census and Statistics Department (C&SD).

Chart 3.2
Contributions to quarter-to-quarter percentage change in real GDP



Sources: C&SD and HKMA staff estimates.

Looking ahead, the Hong Kong economy is expected to grow faster at a close-to-trend rate in 2013. The drags from external demand should subside gradually, but a full recovery in exports will still take some time as the global economy is struggling to achieve sustained growth. Domestically, consumer spending will continue to be bolstered by the sustained strength in the labour market, higher incomes and increased wealth afforded by the booming asset markets. Large-scale infrastructure works and private building activity are also expected to hold up quite well, although the outlook for capital investment and inventory stocking is less certain as business sentiment remains somewhat cautious. The moderately expansionary fiscal stance in the 2013/14 Budget should provide support to the economy with committed infrastructure projects and a package of relief measures.

Our in-house composite index of leading indicators predicts solid growth in economic activity in the near term, as indicated by the accelerating six-month growth rate (Table 3.A). Overall for 2013, private sector analysts project the economy to grow by 2.5-4.7%, averaging at around 3.5% (Chart 3.3). The Government also sees growth strengthening to the range of 1.5-3.5%.

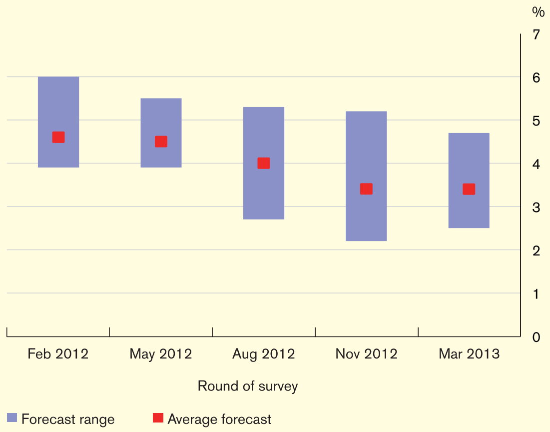
Table 3.A
Recent trends of the coincident economic indicator and the leading economic indicator

	% change over one month		% change over six months	
	CEI	LEI	CEI	LEI
2012				
Jan	-1.4	1.1	-1.2	0.8
Feb	2.0	1.0	0.2	2.3
Mar	-1.0	0.4	1.0	3.1
Apr	0.6	0.8	0.3	3.5
May	-0.7	-0.1	0.9	3.7
Jun	0.8	0.2	0.3	3.5
Jul	-0.2	-0.3	1.5	2.1
Aug	1.3	0.2	0.9	1.2
Sep	1.5	0.5	3.4	1.2
Oct	1.2	1.1	4.1	1.5
Nov	2.0	0.6	6.9	2.2
Dec	1.1	0.4	7.2	2.4
2013				
Jan	1.4	0.5	8.9	3.3
Feb	n.a.	0.3	n.a.	3.4

Note: The six-month rate of change of a leading economic indicator is commonly referred to for detection of any business cycles turning points.

Source: HKMA staff estimates.

Chart 3.3
Consensus forecasts for 2013 real GDP growth



Source: Consensus Economics.

The improved economic outlook is subject to a number of uncertainties and risks. The unresolved European sovereign debt problems and the uncertain US fiscal outlook will continue to cast a shadow over Hong Kong's growth prospects. Any significant adverse developments could have negative spillover effects on the Hong Kong economy through trade and financial channels. Moreover, aggressive monetary easing in advanced economies will further increase global excess liquidity. There could be further upward pressures on domestic consumer and asset prices. In particular, a continued heat-up of the housing market could further aggravate the misalignments between housing prices and the fundamentals, and increase the risk to Hong Kong's macroeconomic and financial stability.

3.2 Domestic demand

Consumption

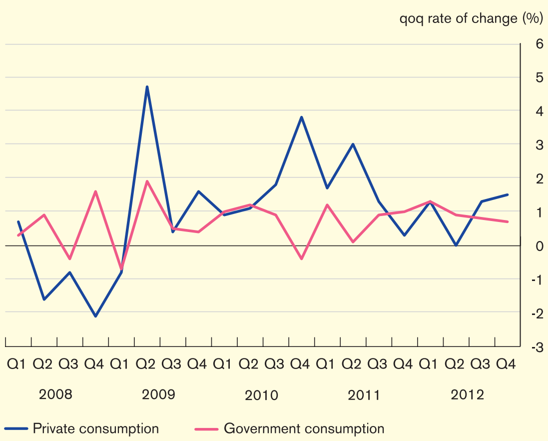
Private consumption revived markedly in the second half of 2012 and was a main engine of real GDP growth, thanks to stable job and income conditions, earlier fiscal stimulus and increased wealth from the property and stock

markets (Chart 3.4). Its sequential growth picked up to 1.3% in the third quarter and 1.5% in the fourth quarter. Consumption of goods, particularly durable goods, rose at a faster pace. Service consumption also displayed a growth pick-up amid increased financial market activities. Box 2 explains the strength of private consumption in recent years, which was found to have accounted for the deterioration in the current account balance in Hong Kong during the period.

In 2013, private consumption growth is likely to remain strong on the back of sanguine consumer sentiment, labour market resilience and sustained rises in incomes. The relief measures recently introduced in the 2013/14 Budget will also provide additional support. The mean consensus forecast for private consumption growth is now 3.9% for 2013, slightly slower than the 4.0% growth in 2012.

Government consumption continued to hold up reasonably well, expanding by 0.8% in the third quarter and 0.7% in the fourth quarter (Chart 3.4). Its growth rate is expected to pick up somewhat in the future as suggested in the 2013/14 Budget, where the recurrent part of public expenditure is projected to rise by 8.4% in real terms in the coming fiscal year, higher than the 6.8% increase in 2012/13. [11]

Chart 3.4
Private and government consumption



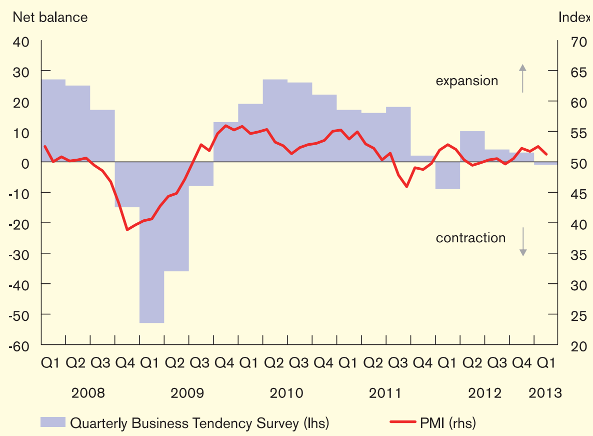
Source: C&SD.

Investment

After being weighed down by inventory destocking in the third quarter, overall investment spending expanded appreciably in the fourth quarter, contributing 1.3 percentage points to real GDP growth. Apart from the volatile inventory investment, gross fixed capital formation remained strong in the second half of the year, attributable to increased public and private construction activity as well as robust capital spending on machinery and equipment. Inventory investment was a significant drag in the third quarter because of active destocking.

While investments in buildings and construction are expected to power ahead in 2013, supported by continued buoyancy in private construction activity and a robust pipeline of public infrastructure works, the outlook for business capital spending and inventory investment is less certain as business sentiment remains somewhat cautious. This is evident in the latest Quarterly Business Tendency Survey (QBTS) and in the recent PMI readings (Chart 3.5). Market consensus now expects a 5.8% increase in gross fixed capital formation in 2013, compared with the 9.1% increase in 2012.

Chart 3.5
Business sentiment



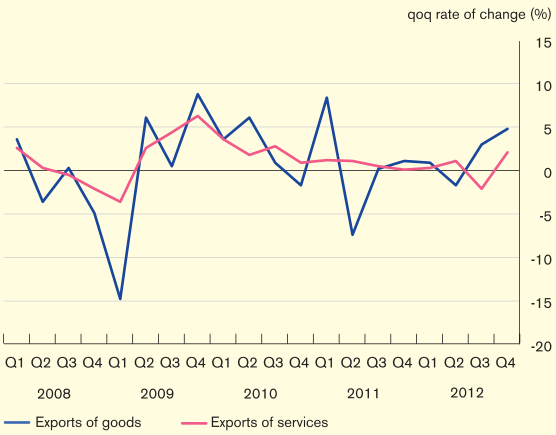
Sources: C&SD and Markit Economics.

[11] The 6.8% increase in recurrent public expenditure in 2012/13 was based on the 2012/13 Budget projections.

3.3 External trade

Hong Kong's overall export performance improved in the second half of 2012 along with the stabilising external conditions. Exports of goods increased briskly by a sequential 3.0% in the third quarter and 4.8% in the fourth quarter (Chart 3.6). This reflected a number of factors including increased external demand from the US, stronger global demand for new electronic products and a growth pick-up of the Mainland economy which helped revive the intra-Asia trade. As for exports of services, a 2.1% contraction was reported in the third quarter, followed by a 2.1% growth in the fourth quarter. The merchanting and other trade-related services components improved alongside increased trade flows, while inbound tourism grew faster.

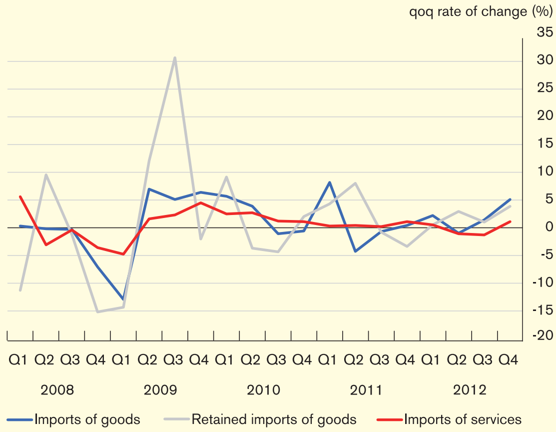
Chart 3.6
Exports of goods and services



Source: C&SD.

Imports of goods revived strongly in the second half of 2012, with sequential growth accelerating to 5.2% in the fourth quarter from 1.5% in the third quarter (Chart 3.7). Robust domestic demand and improving export-induced demand – as reflected in retained imports and re-exports respectively – were the main propellers behind the faster growth in imports of goods. Imports of services declined by 1.2% in the third quarter and then picked up by 1.2% in the fourth quarter. The improving services demand was partly driven by stronger trade-related imports.

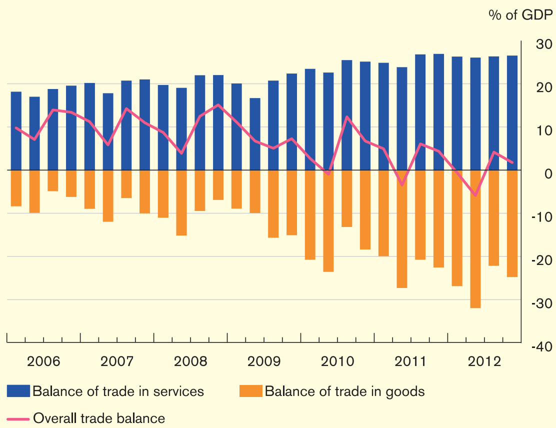
Chart 3.7
Imports of goods and services



Source: C&SD and HKMA staff estimates.

As imports outperformed exports, net exports turned from a contributor to real GDP growth in the third quarter to a sizeable drag in the fourth quarter. In value terms, the seasonally unadjusted overall trade balance recorded a surplus in the second half of 2012, at $31.6 billion (2.9% of GDP), smaller than the surplus of $52.8 billion (5.2% of GDP) recorded in the second half of 2011 (Chart 3.8).

Chart 3.8
Trade balance by component (in nominal terms)



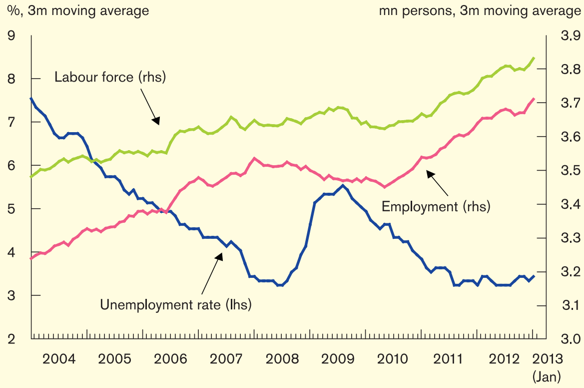
Source: C&SD.

Despite positive developments in recent months, the prospects for a sustained recovery in Hong Kong's exports remain subject to uncertainty. The lingering weakness of the European economies, together with a sluggish recovery in the US, can pose some downside risks to Hong Kong's exports. Reflecting this, the latest QBTS and the HKTDC Export Index still pointed to a negative export outlook. Yet, the strength of the Mainland economy and its flow-on effects on intra-Asia trade are likely to provide some offset. Market consensus expects merchandise exports to increase by 8.2% in nominal terms in 2013, faster than the 5.0% increase in 2012. Overall services exports will benefit from a revival in trade-related and transportation services amid increased trade flows. Inbound tourism and financial services will also be supportive. In anticipation of robust domestic demand and rising export-induced demand, imports of goods and services are expected to progress steadily.

3.4 Labour market conditions

The labour market remained robust in 2012. The seasonally adjusted three-month moving-average unemployment rate hovered between 3.2% and 3.4% in the second half of 2012, staying low at 3.4% in January (Chart 3.9). While the labour force participation rate edged up slightly to 60.8% in January 2013, employment reached a record high of 3.71 million in the same month. Both higher-skilled and lower-skilled segments of the labour market were tight, with the unemployment rate in major sectors, such as manufacturing, import/export trade and wholesale, staying at a low level in the period.

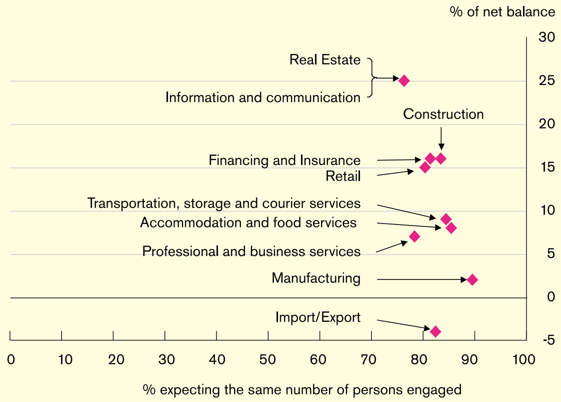
Chart 3.9
Labour market conditions



Source: C&SD.

In the near term, the labour market will continue to be supported by the prevailing strength of domestic demand. The latest QBTS for the first quarter 2013 shows that respondents from all surveyed sectors except the export/import sector expect their employment to increase in the near term, underscoring the strong hiring sentiment (Chart 3.10). The outlook of labour demand is likely to be stable barring any deterioration in the external environment.

Chart 3.10
Quarterly Business Tendency Survey for 2013 Q1: employment



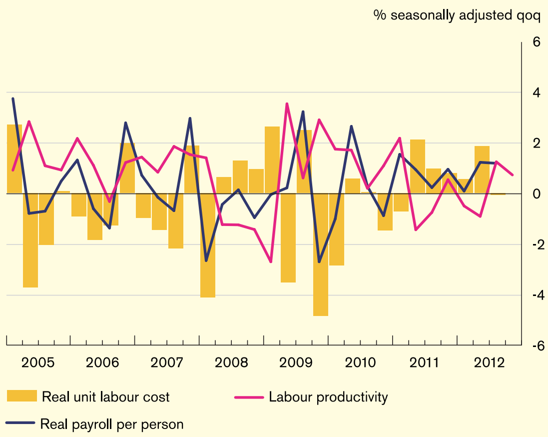
Notes:
1. Net balance refers to the difference between the percentage points of respondents expecting a rise over those expecting a decline.
2. Sectors are classified according to the new Hong Kong Standard Industrial Classification Version 2.0 (HSIC V2.0).

Source: C&SD.

The domestic economy was operating around its potential during the second half of 2012. After the sluggish performance in the second quarter, the economy appeared to have regained momentum in the third and fourth quarters, with the output gap staying almost closed during the same period. The growth momentum also supported the labour market, with the unemployment rate continuing to stay at a relatively low level.

Labour costs remained on the uptrend in face of the robust labour demand and tight labour market conditions. In particular, the real payroll per person for the second and third quarters of 2012 combined registered a 1.7% increase over the previous two quarters (Chart 3.11). Nevertheless, the reaccelerated output growth in the third quarter of 2012 has supported labour productivity, halting a multiple-quarter uptrend of the real unit labour costs from a 1.8% quarter-on-quarter increase in the second quarter of 2012 to a 0.1% decline in the third quarter.

Chart 3.11
Unit labour cost and labour productivity



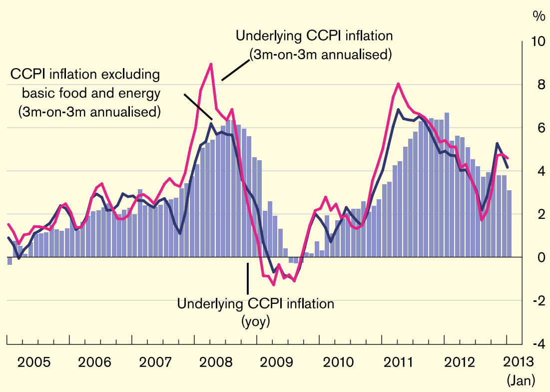
Sources: C&SD and HKMA staff estimates.

The domestic economy is expected to regain a firmer footing in the near term. As such, labour demand is likely to be supported, and labour market tightness could well persist.

3.5 Consumer prices

Local inflation momentum picked up along with the improvement in the local economic environment. After bottoming out at 1.6% in August, the annualised three-month-on-three-month underlying inflation rate increased steadily to reach 4.7% in December 2012 (Chart 3.12). Excluding the volatile components of basic food and energy, the core underlying inflation rate also settled on a similar upward trend, suggesting that upward price pressures may persist for a while. Notwithstanding the increase in the sequential momentum, the year-on-year underlying inflation rate remained stable at about 3.8% over the same period, and dropped to 3.1% in January, due to differences in the timing of the Chinese New Year.

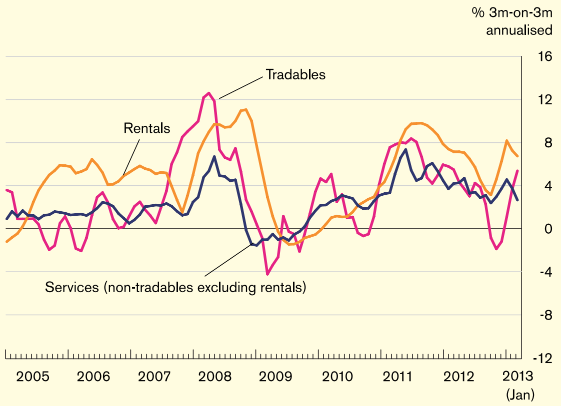
Chart 3.12
Different measures of consumer price inflation



Sources: C&SD and HKMA staff estimates.

The increase in the sequential inflation momentum was broad based. In particular, the rental component inflation rose to 8.0% in November 2012 from 3.0% in August, driven by the increase in public housing rentals in September 2012 (Chart 3.13). The non-tradable component inflation also registered some increases during the same period, reflecting the pass-through of the increases in retail rentals to the CCPI miscellaneous service component. On the other hand, the tradable component inflation picked up during the last two months of 2012, driven by the basic food and the clothing and footwear components.

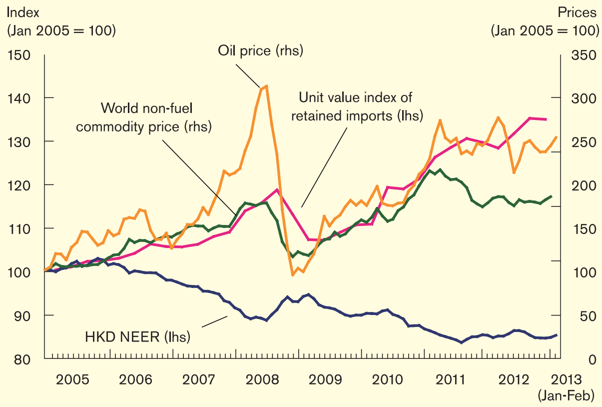
Chart 3.13
Consumer price inflation by broad component



Sources: C&SD and HKMA staff estimates.

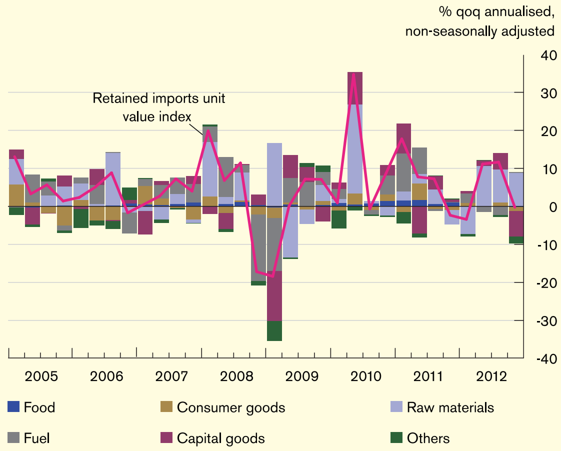
Import price inflation moderated by the end of 2012 amidst softened global commodity prices. The quarter-on-quarter annualised inflation rate dropped to -0.7% in the final quarter of 2013, from 11.2% in the third quarter of 2012 and 10.7% in the second quarter (Chart 3.14). Analysed by end-use category, raw materials continued to be the main driver of import price inflation (Chart 3.15).

Chart 3.14
Commodity and import prices



Sources: C&SD and IMF.

Chart 3.15
Contributions to import price inflation

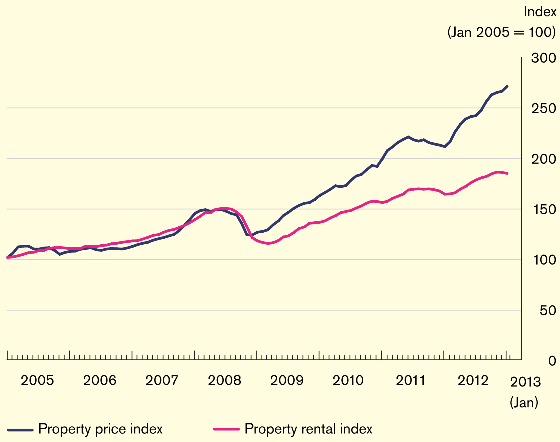


Sources: C&SD and HKMA staff estimates.

Looking ahead, the sequential inflation momentum may remain steady on the back of the pass-through from the pick-up in market rentals registered in 2012 (Chart 3.16). That said, the annual year-on-year inflation rates in 2013 may still moderate somewhat, with the latest Government forecast for the underlying inflation rate being 4.2%, down from 4.7% in 2012. In particular, the fragile global economic environment is expected to help contain commodity price pressures. In addition, the local output gap is estimated to be close to zero in the second half of 2012, restraining labour cost pressures.

In terms of risks to the baseline outlook, on the upside, unfavourable weather conditions in food producing countries, such as China, may add some volatility to the CCPI food component inflation. Meanwhile, abundant global liquidity, driven by quantitative easing in the advanced economies may pose sharper-than-expected upward pressures to global commodity and asset prices. More-than-expected resilience in the property market may also boost the CCPI rental component inflation to higher-than-expected levels going forward. On the downside, any unexpected sharp deterioration in the external environment, for example, due to a worsening in the European sovereign debt crisis or an increase in the geopolitical risk in North East Asia, may drag on global growth and consequently put demand pressures on local inflation.

Chart 3.16
Residential property price and rental indices

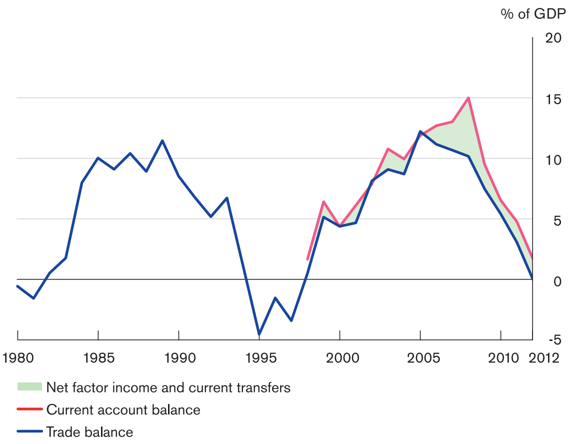


Source: Rating and Valuation Department (R&VD).

Box 2
Recent movements of the current account balance in Hong Kong

Hong Kong's current account balance has declined in recent years, from recording a surplus equivalent to 15% of GDP in 2008 down to 6% of GDP in 2011 and about 2% of GDP in 2012 (Chart B2.1). This article explains the recent decline in Hong Kong's current account balance, based on the trade-balance approach and the savings-investment approach. We find that it was much stronger domestic consumption (hence a decline in domestic savings) that has contributed to such developments. This leads us to examine in further detail the domestic consumption behaviour. Our empirical study shows that rising net housing wealth as a result of the booming property market could have explained more than half of the consumption growth since 2009.

Chart B2.1
Hong Kong's current account balance under the trade balance approach



Source: C&SD.

The concept of current account balance and two analytical approaches

The current account balance reflects the gap between income and spending in an economy, by measuring the net earnings from "here and now" transactions (i.e. those transactions that do not give rise to future claims) with foreigners during a specific period of time. It is usually viewed from the perspective of external balance of an economy as mainly the difference between exports and imports, also known as the trade balance approach. Essentially, the current account balance is the sum of the trade balance, net factor income and net current transfers:

Current account balance
= Trade balance
+ Net factor income + Net current transfers

For most economies including Hong Kong, trade balance itself is the main thrust of the current account balance. A current account surplus therefore usually reflects exports in excess of imports, and vice versa in the case of a current account deficit.

Another way to look at the current account balance is the savings-investment (or internal balance) approach. By the national income accounting identity, the current account balance can be viewed as the gap between national savings and domestic investment:

Gross national product (GNP) [12]
= Consumption + Investment
+ Current account balance

[12] In our discussion, the term GNP refers to the gross national disposable income as defined in the sixth edition of the IMF's *Balance of Payments and International Investment Position Manual*.

Current account balance
= GNP – (Consumption + Investment)
= (GNP – Consumption) – Investment
= National savings – Investment

Unlike the trade balance approach, the savings-investment approach stresses how macroeconomic factors, through domestic consumption and investment decisions, can ultimately determine the current account balance. When an economy runs a current account surplus, gross national savings must, by definition, exceed domestic investment. Alternately, when an economy has a current account deficit, national savings must be less than domestic investment.

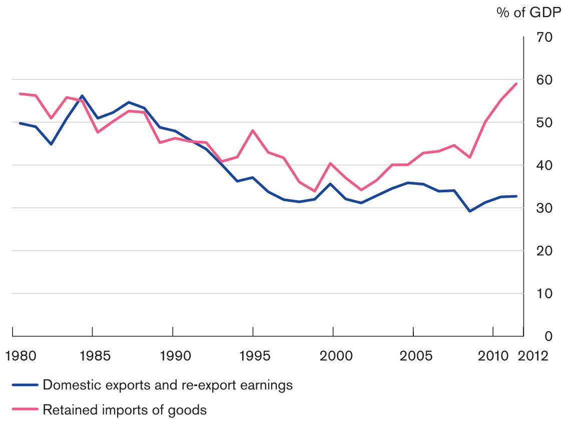
What causes the recent decline in Hong Kong's current account balance?

(A) The trade balance approach

Along with the current account deterioration in recent years, Hong Kong's trade balance also worsened, from a surplus equivalent to 10% of GDP in 2008 to 3% of GDP in 2011 and nil in 2012 (see Chart B2.1 above). A further look at the trade dynamics suggests that much stronger imports, rather than lower exports, have contributed to such developments.

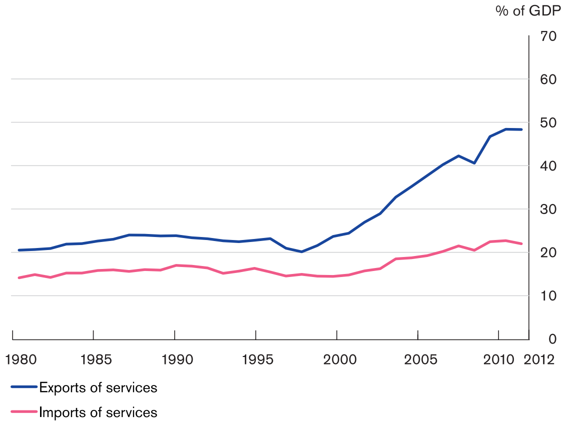
Chart B2.2 shows that there has not been a significant drop in exports of goods (i.e. measured as domestic exports and re-export earnings) in GDP terms since 2009. Market diversification has allowed Hong Kong traders to benefit from the two-speed world, with weaker demand from the advanced economies being offset by stronger demand from the developing economies including Mainland China and other emerging economies in Asia, Latin America and the Middle East. Services exports also held up well. Offshore trade, as part of services exports, continued to expand. More importantly, inbound tourism has provided considerable support to services exports, leading to their dramatic increase in recent years (Chart B2.3).

Chart B2.2
Hong Kong's trade in goods



Source: C&SD.

Chart B2.3
Hong Kong's trade in services



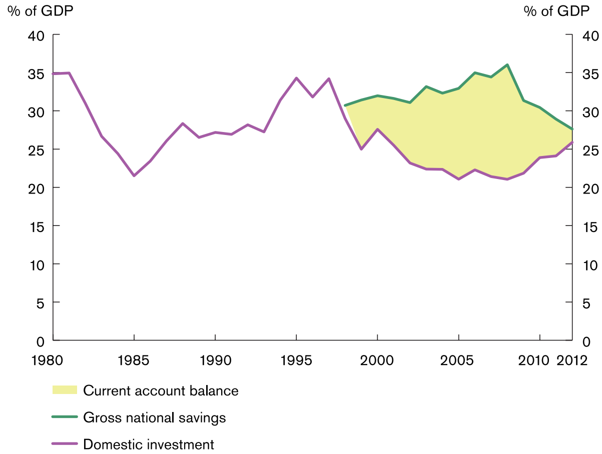
Source: C&SD.

On the other hand, over the past five years, retained imports of goods have increased noticeably to 59% of GDP from 45% of GDP. This reflected stronger domestic demand, as well as surging inbound tourist spending, which also contributed to the rise in services exports in recent years. However, it is difficult to know to what extent it is domestic demand or tourist demand that has contributed to the rise in retained imports. [13] Meanwhile, services imports have grown steadily. If excluding those related to trade and logistics, there would be even stronger increases in services imports due to robust demand for financial and insurance services and outbound travel.

(B) The savings-investment approach

The savings-investment approach provides another perspective of the recent decline in Hong Kong's current account balance. Chart B2.4 shows that it was mainly driven by a decrease in the savings rate to 28% of GDP in 2012 from 36% of GDP in 2008. That also means domestic consumption, as the mirror image of savings, has grown rapidly and much faster than income. [14] On the other hand, there are no signs of excessive investment. The investment rate (i.e. the investment-to-GDP ratio), while increasing gradually amid a robust pipeline of government infrastructure projects, remained below the historical average level.

Chart B2.4
Hong Kong's current account balance under the savings-investment approach



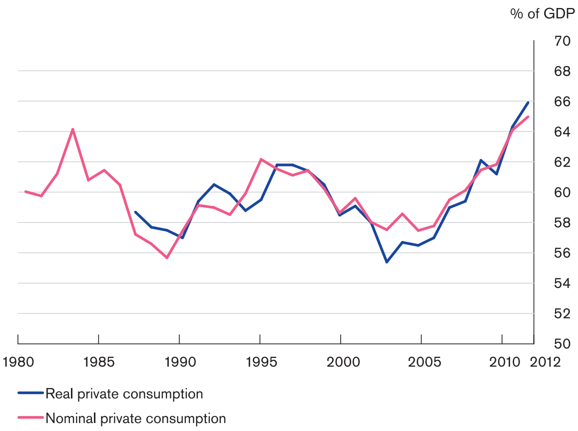
Source: C&SD.

13 Shuttle trade from Hong Kong to Mainland China can potentially understate exports and hence the trade balance and current account balance. While it is difficult to estimate the exact size of shuttle trade due to lack of reliable data, it seems not likely that shuttle trade alone could have explained the decline in Hong Kong's current account balance, which amounted to 13 percentage points of GDP over the past five years. Moreover, given that shuttle trade has existed since well before 2008, the extent of any misestimation on the current account balance would be relatively steady over time, and therefore would not have a significant impact on its changes over time.

14 We also use household expenditure surveys to cross check the savings rate. Household expenditure surveys, however, are conducted every five years, the latest two rounds in 2005 and 2010 respectively. As such, the comparison period does not exactly correspond to the period (from 2008 to present) over which we observed a sharper deterioration in Hong Kong's current account position. With this caveat and limitation, we find that the trend of the household savings rate so derived collates with that using the macro numbers we deployed in this article. The average household savings rate declined by 3.3 percentage points to 11.5% of income between 2005 and 2010. This is consistent with the decrease in the aggregate savings rate (by 2.5 percentage points of GDP) over this same period using the macro numbers.

Indeed, private consumption has increased at an average annualised rate of 6.3% since the second quarter of 2009. Moreover, private consumption growth was high in both nominal and real terms, suggesting that inflation or the price effect was not the main underpinning force of increased spending. The synchronised increase in both the nominal and real private consumption-to-GDP ratios also indicates that increased spending was not simply a nominal but also a real phenomenon (Chart B2.5).

Chart B2.5
Private consumption-to-GDP ratio



Source: C&SD.

What could have driven the recent strong consumption growth in Hong Kong?

We have identified stronger domestic consumption (hence a decline in domestic savings) as the main cause of the recent decline in the current account balance. But what could have driven the strong consumption growth? Standard macroeconomic theories suggest consumption depends on such factors as labour income, wealth, and the real interest rate. They respectively account for the income effect, wealth effect and inter-temporal substitution effect. Higher income induces more consumption, while rising asset prices make consumers wealthier or feel wealthier, so they spend more. Rising asset prices also allow households to have more collaterals against which to borrow and spend. Regarding the inter-temporal substitution effect, a lower real interest rate will induce consumers to spend more today because current consumption becomes less costly than future consumption.

Besides these factors, long-term structural factors such as population ageing and financial deepening may also affect consumption. Moreover, households may save more and consume less out of precautionary motive if they face more income uncertainty, which may be measured by unemployment volatility.

To determine the underlying factors behind the strong consumption growth in recent years, we estimate a consumption function for Hong Kong following Lai and Lam (2002) [16], Cutler (2004) [16] and Liu, Pauwels and Tsang (2007a). [17] Determinants considered in the analysis include a) cyclical factors such as labour income, net housing wealth, net financial wealth and real interest rate; b) long-term structural factors such as ageing population and financial deepening and unemployment volatility.

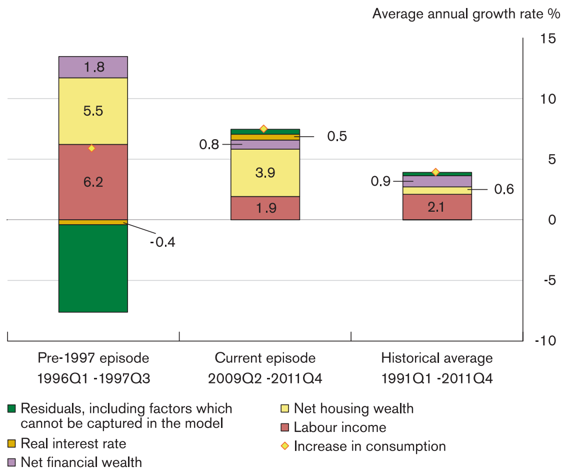
15 Lai, Kitty and Raphael Lam (2002), "The nexus of consumer credit, household debt service and consumption," HKMA Quarterly Bulletin, November 2002, 35-48.

16 Cutler, Joanne (2004), "The relationship between consumption, income and wealth in Hong Kong," Hong Kong Institute for Monetary Research Working Paper No.01/2004.

17 Liu, Li-gang, Laurent L. Pauwels and Andrew Tsang (2007), "Hong Kong's consumption function revisited," HKMA Working Paper No.16/2007.

We find that net housing wealth was the main driver of the strong consumption growth in recent years (Chart B2.6). It contributed more than half of the consumption growth during 2009-2011, by adding, in annualised terms, about 3.9 percentage points to the 7.5% growth rate. This growth contribution was much higher than the historical average during 1991-2011, which was just some 16% of the consumption growth over this period of time. Similarly, net housing wealth also made an outsized contribution during the pre-1997 episode.

Chart B2.6
Drivers of consumption growth in the current episode, the pre-1997 episode and the period from 1991 to 2011



Source: HKMA staff estimates.

The contribution from labour income was still visible in recent years but not as large as that in the pre-1997 episode or over the long term. The historical norm shows that consumption growth has been largely driven by income growth over the past two decades. It is worth pointing out that negative real interest rates, through the inter-temporal substitution effect, also played a role in fuelling consumption growth in recent years. In contrast, in the pre-1997 episode and over the long term, real interest rates only provided negative and nil contributions respectively. The contribution from net financial wealth was relatively small in recent years when compared with previous episodes. [18] Moreover, none of the long-term structural factors are found to be statistically significant.

Conclusion

Our analysis shows that the decline in the current account balance since 2009 was mainly due to stronger domestic consumption (hence a decline in domestic savings). We also find that much of the consumption growth could be accounted for by the housing wealth effect and to a lesser extent by rising labour income. However, housing wealth in Hong Kong can be volatile. Indeed, the strong consumption growth in the pre-1997 episode was also to a large extent driven by housing wealth, but the burst of the property bubble eventually led to a sharp decline in consumption and plunged the economy into recession. This reminds us that property market cycles can pose risks not only to banking and financial stability but also to macroeconomic stability.

[18] This could be due to a faster rise in consumer credit in recent years, which would act as a drag on net financial wealth. Nevertheless, consumer credit may have helped support consumption growth in recent years, as credit card advances and other personal loans have increased by about 15% each year since 2010.

4. Monetary and financial conditions

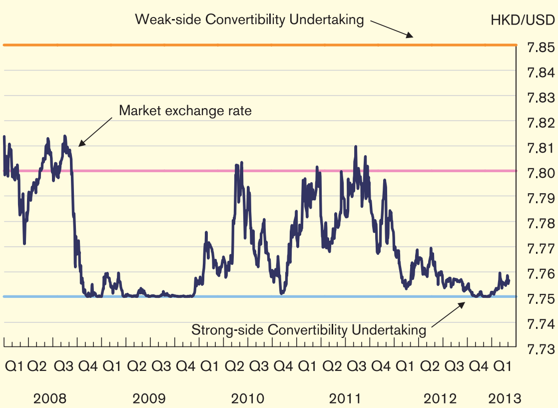
Exchange rate, interest rates and monetary developments

The Hong Kong dollar exchange rate strengthened and stayed close to 7.75 during the second half of 2012. The strong-side Convertibility Undertaking (CU) was triggered repeatedly in the fourth quarter amid strong inflows of funds. Local monetary conditions remained accommodative, with interest rates staying at low levels. Loan growth has moderated, though with some signs of pick-up in domestic credit towards the end of the year.

4.1 Exchange rate and interest rates

The Hong Kong dollar exchange rate strengthened and stayed close to 7.75 during the second half of 2012 (Chart 4.1). The strong-side CU was triggered repeatedly in the fourth quarter due to inflows of funds, which partly reflected increased allocation to Hong Kong dollar assets by overseas investors, as well as the proceeds from issuance of foreign currency bonds by Hong Kong firms in exchange for Hong Kong dollars. The stronger equity IPO activities in late November and December also to some extent supported the inflows. The Hong Kong dollar exchange rate then softened slightly in early 2013 amid increased allocation to US dollar assets, to 7.7562 on 28 February.

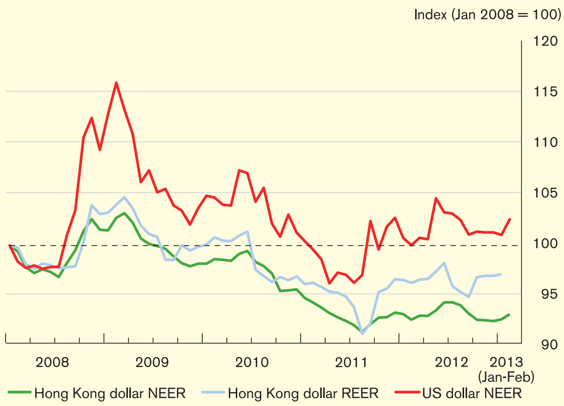
Chart 4.1
Hong Kong dollar exchange rate



Source: HKMA.

Mainly reflecting the movements of the US dollar against most of the major currencies, the trade-weighted Hong Kong dollar nominal effective exchange rate index (NEER) weakened in the third quarter and then stabilised in the fourth quarter. For the whole six-month period, the NEER declined by 2.0% (Chart 4.2). The Hong Kong dollar real effective exchange rate index (REER) also weakened, but at a milder pace due to slightly higher inflation in Hong Kong relative to its trading partners.

Chart 4.2
Nominal and real effective exchange rates



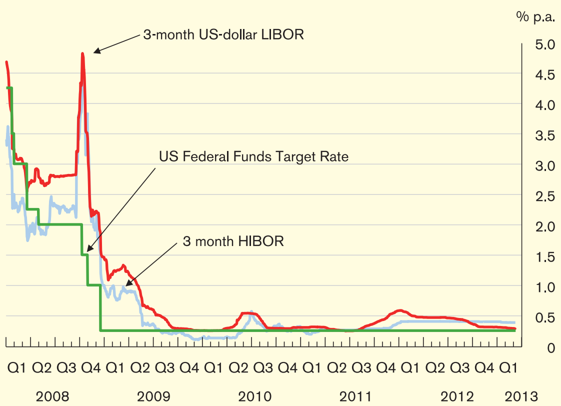
Note: Real effective exchange rate index is seasonally adjusted.

Sources: C&SD, CEIC and HKMA staff estimates.

The low interest rate environment in Hong Kong continued amid the ongoing expansionary monetary policy in the US. With the Federal Funds Target Rate staying at 0 – 0.25%, the Base Rate under the Discount Window operated by the HKMA was held unchanged at 0.5% (Chart 4.3). In the Hong Kong dollar money market, the interbank rates also stayed low, with the overnight and three-month HIBOR fixings hovering around 0.10% and 0.40% respectively. For maturities beyond three months, the interbank rates edged down slightly along with the LIBOR counterparts. Overall during the second half, there were only small fluctuations in the Hong Kong dollar interbank rates and the HIBOR-LIBOR spreads remained broadly stable.

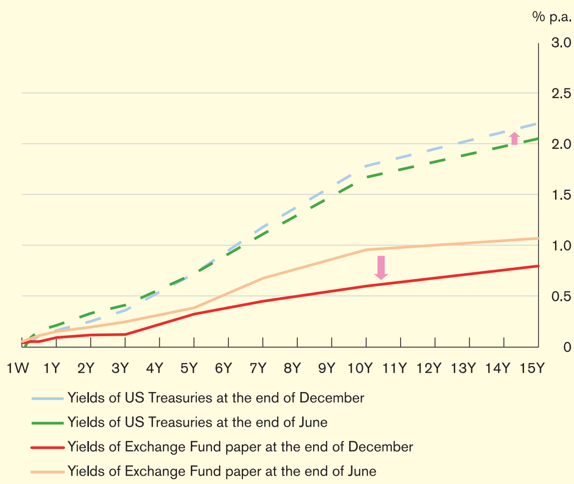
The nominal yield curve of Exchange Fund papers shifted down during the second half of 2012, partly reflecting increases in banks' demand for high quality Hong Kong dollar assets (Chart 4.4). On the other hand, the US Treasuries yield curve shifted up for long tenors but edged down for short tenors. As a result, the negative yield spread between long-dated Exchange Funds papers and US Treasuries widened during the second half. Moving into early 2013, despite additional issuance of Exchange Fund Bills, the yield curve of Exchange Fund papers has steepened, mainly reflecting larger increases of long-dated yields during this period. The yield spread against US Treasuries has narrowed somewhat as a result.

Chart 4.3
Interest rates of the Hong Kong dollar and US dollar



Source: CEIC.

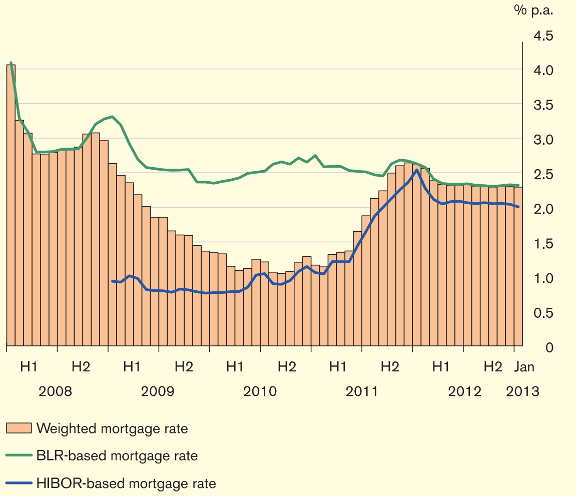
Chart 4.4
Yield curve movements in the second half of 2012



Source: HKMA.

Interest rates on the retail front remained steadily low. The Best Lending Rates (BLR) continued to be stable at 5.00% or 5.25% throughout the second half of 2012. Meanwhile, the average mortgage interest rate edged down by two basis points from June to 2.30% in December (Chart 4.5). Mainly due to a mild decrease in the weighted deposit rate, the composite interest rate decreased by 10 basis points to 0.32% at the end of December (Chart 4.6). This suggested an easing in retail banks' average cost of funds during this period.

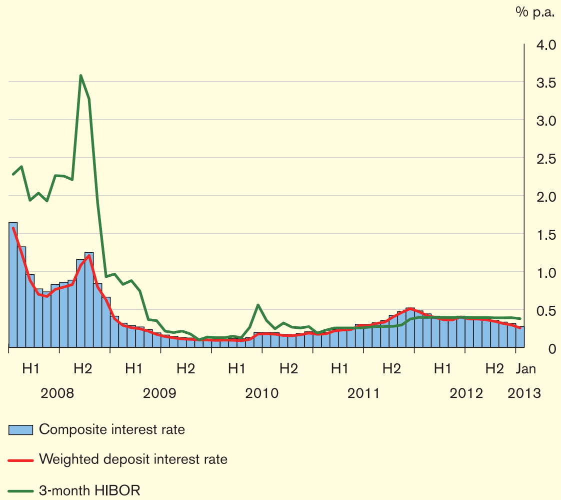
Chart 4.5
Mortgage interest rates for newly approved loans



Note: The share of HIBOR-based mortgage plans was small in 2008. All mortgage rates are estimates only.

Source: HKMA staff estimates.

Chart 4.6
Deposit interest rates and the average cost of funds



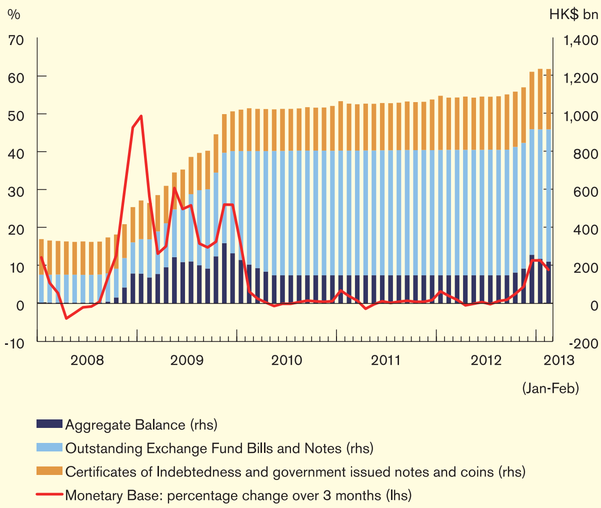
Sources: HKMA and CEIC.

The Hong Kong dollar interest rate environment just described remained roughly stable moving into 2013, with the interbank rates and the composite rate staying at low levels. As implied by the term structure, the HIBORs and swap rates are still expected to be low in the next two years. The latest consensus estimates for the three-month HIBOR also remain steady at 0.40 – 0.50% over the next 12 months. Broadly tracking the movements of interbank rates, lending and deposit rates would likely remain relatively low, yet subject to changes in the demand and supply conditions for loans and deposits in the banking system. In mid-March 2013, a few leading banks raised the interest rates for new mortgages by 25 basis points, reportedly in response to higher funding costs.

4.2 Money and credit

Monetary aggregates and bank lending increased steadily in the third quarter of 2012 but showed stronger growth thereafter. Due to repeated triggering of the strong-side CU in the fourth quarter, the Aggregate Balance and hence the Monetary Base increased appreciably (Chart 4.7). In early 2013, additional Exchange Fund papers were issued to meet the strong demand by banks for liquidity management. As a whole, the Aggregate Balance and the outstanding Exchange Fund papers rose by HK$107.1 billion during this period. The outstanding Certificate of Indebtedness (CIs) increased steadily, while currency notes and coins in circulation were little changed.

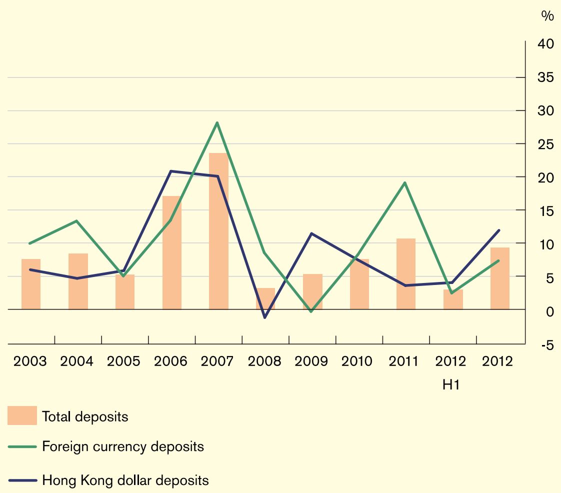
Chart 4.7
Monetary Base components



Source: HKMA.

The Hong Kong dollar monetary aggregates showed much faster increase during the second half of the year partly reflecting inflows of funds. For the whole year, the seasonally adjusted Hong Kong dollar narrow money supply (HK$M1) increased by 15.8% and the broad money supply (HK$M3) by 12.1%. Hong Kong dollar deposits increased by 11.7% in 2012 as a whole, compared with a modest annualised 3.8% increase in the first half (Chart 4.8). Demand and savings deposits recorded double-digit growth, while time deposits were little changed. Growth in foreign currency deposits picked up to 7.0% for the whole year, compared with an annualised 2.2% in the first half. This largely reflected brisk growth in US dollar deposits. Renminbi deposits bounced up in the second half. Their recent developments will be discussed in greater detail later in this section.

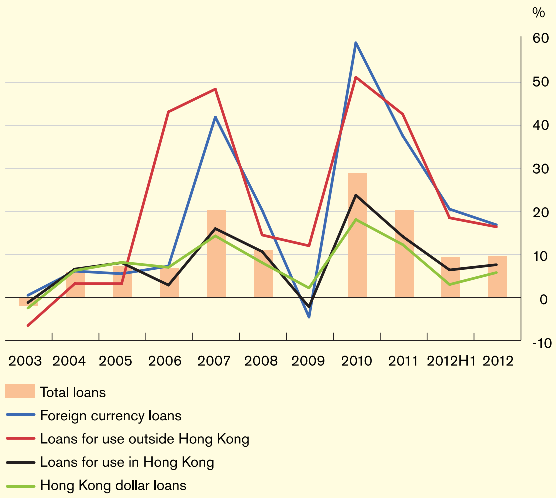
Chart 4.8
Deposit growth



Note: Growth rates in 2012 H1 are annualised.
Source: HKMA.

On the credit side, total loan growth slowed visibly to 9.6% in 2012 from 20.2% in 2011 along with the slowdown in the domestic economy and in part reflecting the impact of prudential measures by the HKMA (Chart 4.9). But compared with the first half, there was a slight acceleration in loan growth later in the year led by Hong Kong dollar loans and loans for domestic use, although growth remained modest at 5.5% and 7.3% respectively for the whole year. Foreign currency loans and loans for non-domestic use saw growth decelerating throughout the year to around 16%.

Chart 4.9
Loan growth

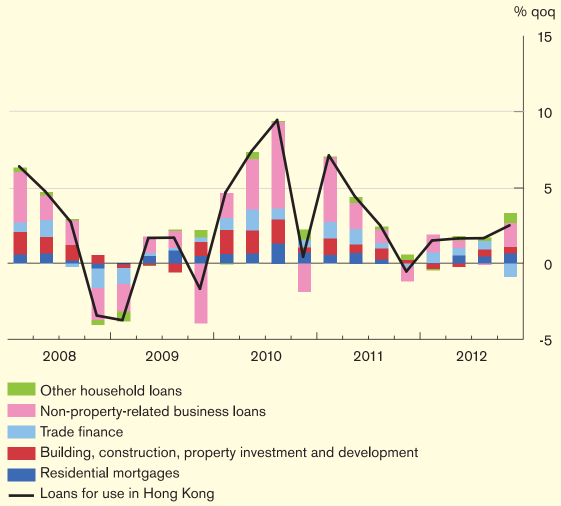


Note: Growth rates in 2012 H1 are annualised.

Source: HKMA.

Analysed by economic use, most types of loans for domestic use except trade financing showed faster growth in the second half (Chart 4.10). Property-related loans increased steadily amid pick-ups in property trading and construction activities. Non-property-related business loans grew even faster. In particular, loans to financial concerns and stockbrokers expanded vibrantly alongside revivals in stock market and fund raising activities. Loans to wholesale and retail trade continued to rise at a robust pace. Household loans (including residential mortgages, credit card advances and personal loans) also increased notably. As a result, the household debt-to-GDP ratio rose to a high of 61%, suggesting households could have a more stretched balance sheet.

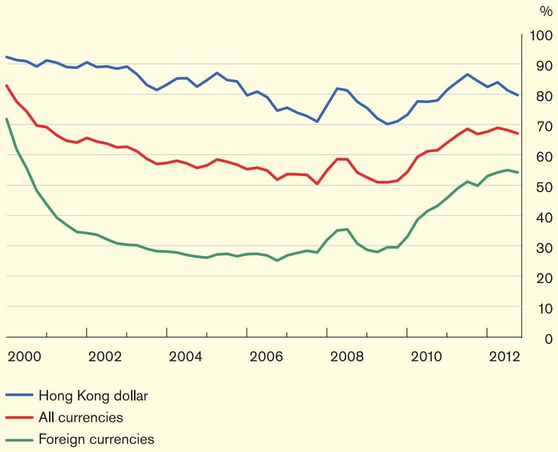
Chart 4.10
Loans for use in Hong Kong by sector



Source: HKMA.

Due to relatively stronger increase in deposits, the Hong Kong dollar loan-to-deposit ratio declined to 79.8% in December 2012 from 84.0% in June (Chart 4.11). This reflected some easing in the Hong Kong dollar liquidity conditions. The foreign currency loan-to-deposit ratio was little changed from June, staying at 54.3% in December.

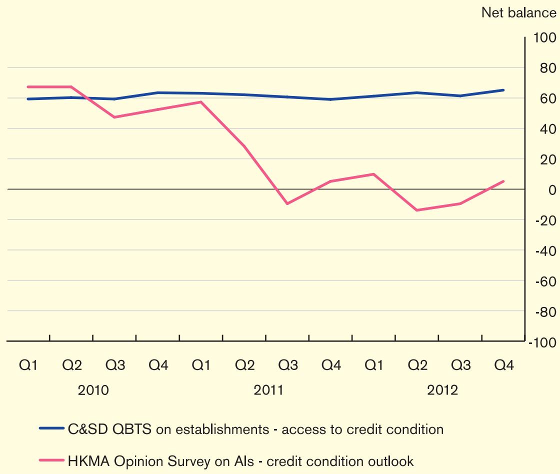
Chart 4.11
Loan-to-deposit ratios



Source: HKMA.

It is likely that credit demand will increase in the near term amid signs of improvement in the domestic economy. The latest HKMA Opinion Survey on Credit Condition Outlook points to stronger credit demand in the period ahead, with the net balance (the difference between the proportion of surveyed AIs expecting an increase and those expecting a decrease) turning positive again (Chart 4.12). Meanwhile, credit supply is expected to remain accommodative with the continuation of the low interest rate environment. The latest QBTS also indicates no signs of deterioration in firms' credit access.

Chart 4.12
Surveys on credit demand and credit access

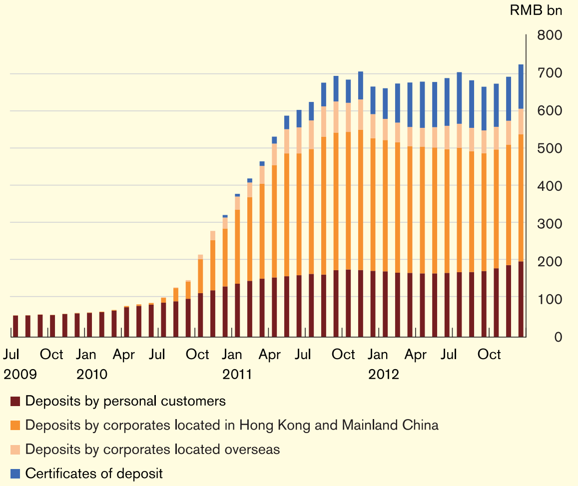


Sources: HKMA and C&SD.

The funding structure of banks' renminbi business in Hong Kong continues to evolve. Banks were increasingly issuing renminbi certificates of deposits (CDs) as a means to tap renminbi funds in the first half of 2012, although such tendency moderated somewhat in the second half of the year. Starting from 1 August 2012, banks are offering renminbi services to personal customers who are non-Hong Kong residents, and this has provided an additional source of renminbi funding.

For the year as a whole, renminbi customer deposits increased by 2.5% to RMB603.0 billion (Chart 4.13). In Hong Kong dollar terms, this represented 9.1% of total deposits in the banking system, compared with a 9.6% share a year ago. Meanwhile, outstanding CDs surged by 60.5% to RMB117.3 billion. Taken together, the total outstanding amount of renminbi customer deposits and CDs grew modestly by 8.9% to RMB720.2 billion.

Chart 4.13
Renminbi deposits and outstanding certificates of deposit in Hong Kong



Source: HKMA.

In view of the quick evolution of the offshore renminbi market, Box 4 article provides a preliminary analysis of the determinants to the growth in outstanding renminbi deposits. This helps draw further insights on the development of offshore renminbi liquidity.

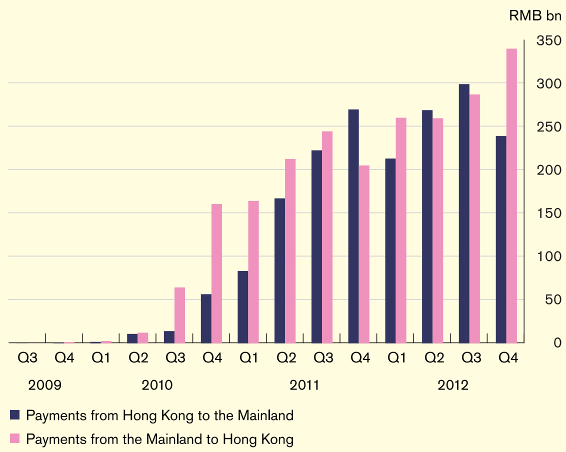
During the second half of 2012, the offshore renminbi exchange rate in Hong Kong (CNH) moved largely in tandem with the onshore exchange rate (CNY) (Chart 4.14). Both the CNH and CNY strengthened amid Mainland's improving economic outlook. The CNH traded at a premium to CNY since November along with the risk-on sentiment in the global financial market.

Chart 4.14
Onshore and offshore renminbi exchange rates

Source: Bloomberg.

Renminbi trade settlement conducted through Hong Kong banks increased by a robust 37.5% to RMB2,632.5 billion during 2012. Among the total, inward remittances from the Mainland and outward remittances from Hong Kong grew at similar pace of 38.8% and 37.3% respectively (Chart 4.15). Renminbi loans extended by banks in Hong Kong surged by 156.6% to RMB79.0 billion, or 1.8% of banks' total loans. The number of participating banks in Hong Kong's renminbi clearing platform increased further to 204 at the end of 2012 from 187 at the end of 2011. The amount due to, and due from, such overseas banks amounted to RMB99.1 billion and RMB117.1 billion respectively.

Chart 4.15
Flows of renminbi trade settlement payments



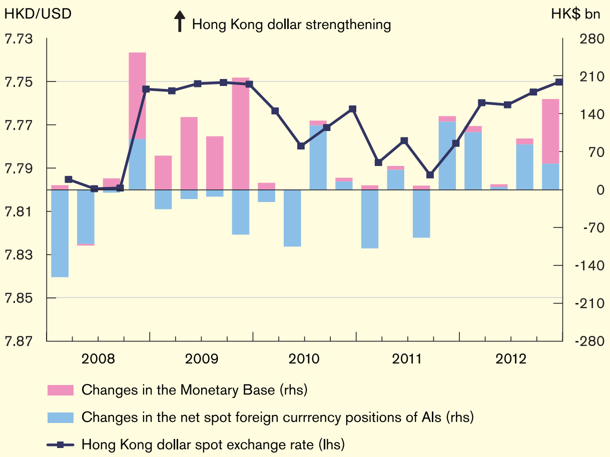
Source: HKMA.

4.3 Capital flows

Demand for Hong Kong dollar assets

Demand for the Hong Kong dollar picked up in the third quarter of 2012 after dwindling somewhat in the second quarter, according to both the price and quantity indicators (Chart 4.16). In particular, the Hong Kong dollar spot exchange rate strengthened slightly to an average of 7.7553 in the third quarter from 7.7614 in the second quarter. The net spot foreign currency positions of the AIs also expanded successively during the third quarter, pointing to some inflows of funds in the non-bank private sector. [19] For the whole quarter, Hong Kong dollar deposits increased by HK$173.4 billion, much larger than the HK$38.1 billion rise in Hong Kong dollar loans.

Chart 4.16
Fund flow indicators (quarterly)



Note: A positive change in the Monetary Base or the net spot foreign currency positions of AIs signals inflows.

Source: HKMA.

Market information suggests that the pick-up in the Hong Kong dollar demand was partly driven by equity investments and liquidity needs of banks towards the quarter-end. The announcement of the ECB to undertake OMTs and of the Fed to purchase additional agency mortgage-backed securities in September might also have lifted investor sentiment, leading to additional demand for the Hong Kong dollar. Given that the Hong Kong dollar spot exchange rate was very near 7.75 at that time, market participants had expected that the strong-side CU could be triggered soon.

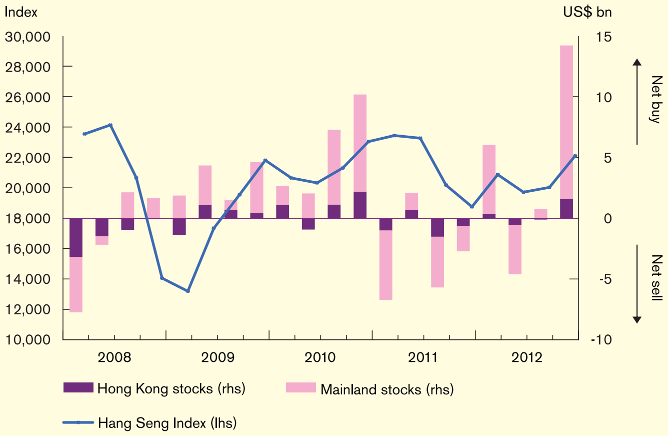
Moving into Q4, the buying pressure on the Hong Kong dollar strengthened, and the strong-side CU was repeatedly triggered between 19 October and 21 December. Consequently, the HKMA purchased a total of US$13.8 billion of US dollars from banks and the Aggregate Balance increased by HK$107.2 billion to close at HK$255.8 billion at the end of 2012. During the quarter, the Hong Kong dollar spot exchange rate stayed near 7.75. The net spot foreign currency positions of the AIs also rose in tandem with the Aggregate Balance, signalling that the Hong Kong dollar demand came mainly from the non-bank private sector (Chart 4.16). As such, Hong Kong dollar deposits recorded another quarter of solid expansion, by HK$190.7 billion, as against a HK$91.0 billion increase in Hong Kong dollar loans.

This fresh round of Hong Kong dollar inflows in the fourth quarter reflected a number of factors in play. First, there was increased allocation to Hong Kong dollar assets by overseas investors. Market information suggests that global mutual funds purchased more equities listed in Hong Kong, reversing the broad pattern of net selling

[19] It should be noted that changes in the net spot foreign currency positions of the AIs, or the equivalent of their net spot Hong Kong dollar positions, include the effects of valuation changes like price and exchange-rate changes, and, therefore, are only a proxy for net Hong Kong dollar fund flows.

in the second quarter (Chart 4.17). In particular, improving market sentiment – owing to further monetary easing in the US and the euro area as well as signs of a growth pick-up in the Mainland economy – drove global funds to search for investment opportunities and helped support the equity-related demand for the Hong Kong dollar.

Chart 4.17
Market survey of equity-related flows

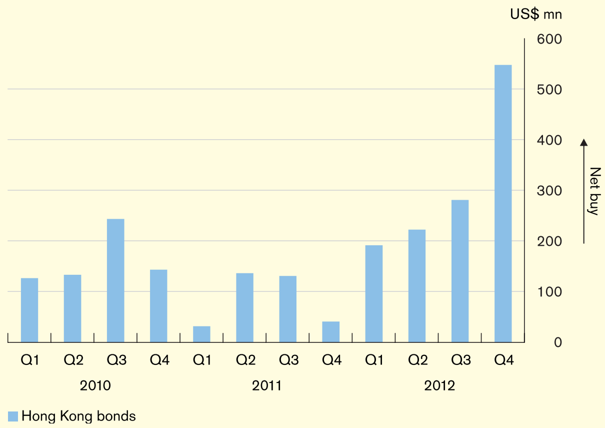


Note: "Mainland stocks" include H-shares, red-chips listed on the Hong Kong Stock Exchange and those shares listed on the Mainland stock markets.

Sources: CEIC and EPFR Global.

Secondly, there was more issuance of US dollar bonds by Hong Kong corporations and part of the foreign currency proceeds from these bond issuance activities were exchanged into Hong Kong dollars in the spot market, thereby increasing the buying pressure on the Hong Kong dollar. More Hong Kong firms turned to the bond market for longer-term funds partly because local syndicated loan market became less active following the European sovereign debt crisis. According to market statistics, the total amount of foreign currency bonds issued by local firms reached US$23.3 billion (around HK$180 billion) in 2012, tripling the size in 2011. On the flip side, net foreign buying of Hong Kong bonds successively increased throughout 2012, as indicated by a survey of fund managers (Chart 4.18). In fact, many Asian economies saw a resurgence of flows into bond funds in 2012.

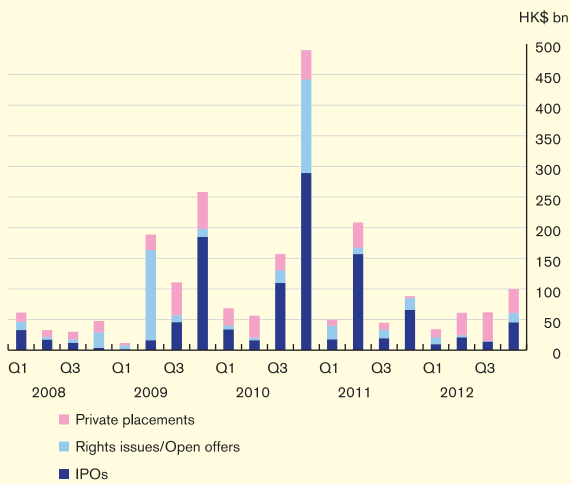
Chart 4.18
Market survey of bond-related flows



Source: EPFR Global.

Thirdly, towards the end of December, fund-raising activity in the stock market bounced back from its earlier doldrums, to some extent giving extra impetus to the Hong Kong dollar demand (Chart 4.19). Specifically, after recording the worst January-September performance in terms of proceeds raised since the 2008-09 global financial crisis, IPO activity picked up in late November and December alongside soaring local stock prices. This was partly attributable to improving liquidity and market sentiment amid more aggressive monetary easing in the US and diminished tail risk in the euro area.

Chart 4.19
Equity funds raised in Hong Kong



Note: Figures exclude warrants exercised, consideration issues and share option schemes.

Source: Hong Kong Exchanges and Clearing Limited.

As such, these Hong Kong dollar inflows might not necessarily be "hot money" as often characterised by some observers. The increase in asset allocation to Hong Kong dollar assets by institutional investors and the exchange for Hong Kong dollars with foreign currencies to meet operational needs of firms were largely normal economic and financial activities. Despite strong inflows into the Hong Kong dollar, there have been no signs of exchange-rate speculation against the Linked Exchange Rate system. (Box 3 analyses recent performance of the Hong Kong dollar exchange market.)

Balance of Payments and cross-border capital flows [20]

The Balance of Payments (BoP) statistics indicated that reserve assets expanded slightly by HK$37.9 billion (7.2% of GDP) in the third quarter of 2012, partly due to incomes from foreign currency assets and increases in CIs, which were more related to the normal operation of the Currency Board instead of autonomous inflow pressures (Table 4.A). Recent HKMA data show that the foreign currency reserve assets of the Exchange Fund increased solidly in the fourth quarter.

Table 4.A
Balance of Payments account by standard component

% of GDP	2010	2011	2012 Q1	2012 Q2	2012 Q3
Current Account	6.6	4.8	0.2	-2.4	4.5
Capital and Financial Account	-5.0	-5.8	2.9	6.6	-9.8
Financial non-reserve assets (net change)	-1.4	-1.3	16.1	5.3	-2.5
Direct investment	-6.9	0.1	-1.8	2.0	-3.7
Portfolio Investment	-24.9	-0.6	40.2	3.7	-10.2
Financial derivatives	1.1	1.1	0.4	0.1	0.2
Other investment	29.3	-1.9	-22.6	-0.5	11.2
Reserve assets (net change)	-3.3	-4.5	-13.2	1.5	-7.2
Net errors and omissions	-1.6	1.0	-3.1	-4.2	5.2

Source: C&SD.

Despite a slight deterioration in the terms of trade, the current account balance returned to a surplus of HK$23.8 billion (4.5% of GDP) in the third quarter, compared with a deficit in the second quarter. While the fourth quarter current account figure is not yet released at the time of writing, the national income data showed some narrowing in the overall trade balance during that quarter. This suggests that the current account balance may have weakened in the fourth quarter, given that factor income is small relative to the trade balance.

There was an overall net private capital outflow of HK$13.2 billion (2.5% of GDP) in the third quarter, with net direct investment outflows and net portfolio investment outflows exceeding net other investment inflows relating to loans and deposits (Table 4.A). A closer look at the

[20] For more discussion about the concept of Hong Kong dollar fund flows and its relationship with cross-border capital flows under the BoP account, see "How do we monitor Hong Kong dollar fund flows?", *HKMA Quarterly Bulletin*, December 2012.

portfolio investment statistics suggested strong flows in both directions, despite the fact that there were more outflows than inflows (Table 4.B). Local residents continued to increase their holdings of non-resident equities. Their holdings of non-resident bonds also rebounded strongly. Non-residents also purchased more Hong Kong equities and debt securities (Chart 4.20), the latter in part related to local enterprises turning more to overseas bond markets to satisfy longer-term funding needs.

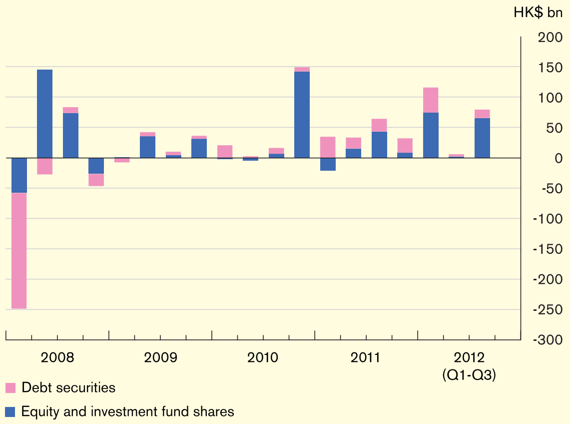
Table 4.B
Cross-border portfolio investment flows

(HK$ bn)	2010	2011	2012 Q1	2012 Q2	2012 Q3
By Hong Kong residents					
Equity and investment fund shares	-365.1	-237.3	83.4	-27.5	-84.3
Debt securities	-261.5	81.5	-4.4	38.9	-49.0
By non-residents					
Equity and investment fund shares	143.5	47.1	74.5	2.4	65.7
Debt securities	40.7	97.7	41.4	3.8	13.9

Note: A positive value indicates capital inflows.

Source: C&SD.

Chart 4.20
Portfolio investments by non-residents

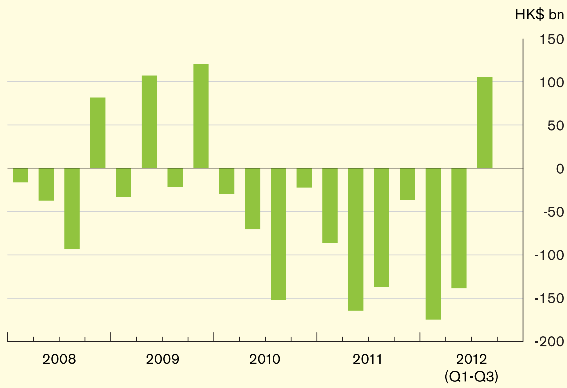


Note: A positive value indicates inflows.

Source: C&SD.

The other investment account recorded some net inflows in the third quarter, in part driven by loan and deposit inflows by local residents. Some local corporations, which had raised funds in the overseas bond market, repatriated the proceeds back to Hong Kong, thereby raising the capital inflows relating to deposits. In addition, after considerable capital outflows relating to external loans between the first quarter of 2010 and the second quarter of 2012, there were some inflows relating to loans in the third quarter. Specifically, local banks contracted their loan assets vis-à-vis non-residents (Chart 4.21), possibly due to loan repayment. This was also consistent with the moderating growth trend in external loans in the local banking system.

Chart 4.21
Loans extended by local banks to non-residents



Note: A negative value indicates outflows.

Source: C&SD.

Outlook for capital flows

The direction and size of fund flows are relatively uncertain in 2013, reflecting the interplay of various pull and push factors. On the one hand, against the backdrop of more aggressive monetary easing in advanced economies, the consequential abundant global liquidity appears to have increased market's risk appetite and incentive for a search for yield around the world and particularly in Asia and other emerging markets. With the economic outlook for Hong Kong and the Mainland China gradually improving, there could be more equity-related demand for Hong Kong dollars. A possible revival in stock market fund-raising activities and the furthering of overseas bond issuance by local corporations (followed by proceeds repatriation) will also likely bolster Hong Kong dollar demands and capital inflows. On the other hand, a faster-than-expected recovery in the advanced economies could induce capital outflows from Hong Kong and the region. Moreover, given that tail risks in the global economy and the financial markets have not vanished, it is possible that the sanguine market sentiment and risk appetite could make a sharp turn and capital flows would be subject to much volatility.

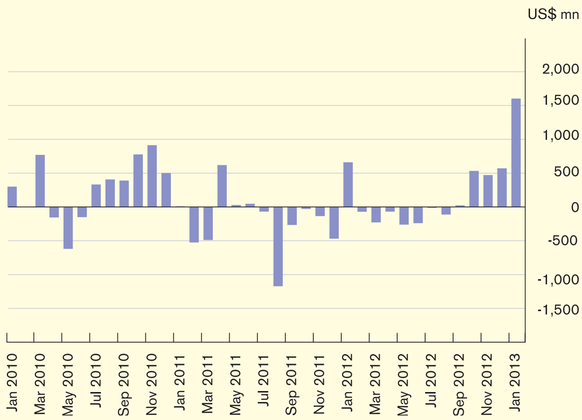
Asset markets

Local equities have rebounded strongly in view of an improved global economic outlook, with implied volatility falling to the lowest level since the subprime crisis. The domestic debt market, especially foreign currency debt issued by local corporations, grew markedly, while the offshore renminbi debt market became increasingly mature. Property prices rose sharply in the second half of 2012, while the volume of transactions was volatile. With only tepid income growth, however, housing affordability has deteriorated much further.

4.4 Equity market

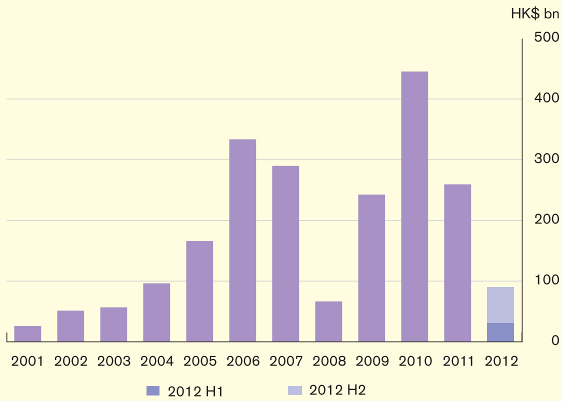
The equity market in Hong Kong gained momentum after the summer break in the wake of sizeable equity fund inflows, improved global financial conditions and growing optimism over the outlook for the Mainland economy. In the first fourth months following the introduction of further monetary easing measures by the Fed and the ECB, Hong Kong attracted strong equity fund inflows amid increased expectations that the Mainland economy was bottoming out in the third quarter (Chart 4.22). Investors subsequently turned cautious towards the end of December as the US "fiscal cliff" deadline approached, but returned from the sideline as soon as the White House and Senate leaders struck a last-minute deal. While the fundamental fiscal problems of the US are still far from being resolved, the deal has nevertheless averted a possible crisis. This, coupled with the release of a higher-than-expected fourth quarter GDP growth for China, substantially improved investor appetite, prompting a rebound in the average daily turnover of local equities to HK$78 billion in January. Meanwhile, activities in the primary market also picked up their pace, with funds raised though IPO in the second half of 2012 growing by over 90% as compared with the amount recorded in the previous six months (Chart 4.23).

Chart 4.22
Equity fund flows into Hong Kong



Source: EPFR Global.

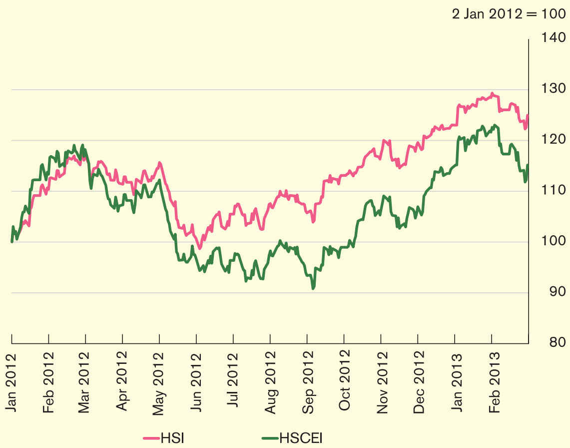
Chart 4.23
The IPO market in Hong Kong



Source: CEIC.

Overall, the Hang Seng Index (HSI) and Hang Seng China Enterprises Index (HSCEI) (also known as the H-share index) rallied strongly by 18.2% and 23.2% respectively from September 2012 to February 2013 (Chart 4.24). Among the sub-indices, the property sector index soared by 29.6% during the same period, despite further governments measures to cool the housing market were introduced. Reflecting improved sentiment in the equity market, the implied volatility of the HSI once fell to 12.3%, the lowest level since August 2005.

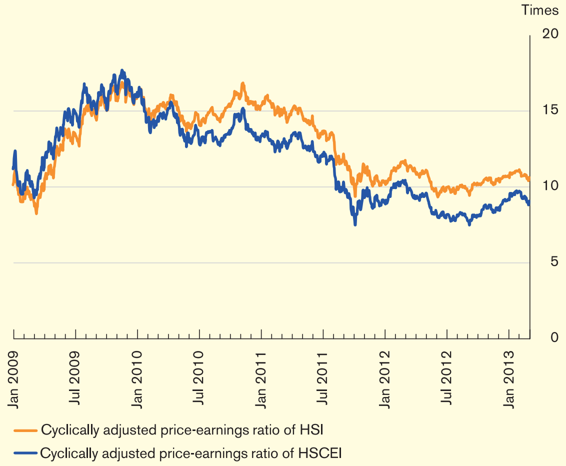
Chart 4.24
The Hang Seng Index and Hang Seng China Enterprises Index



Source: Bloomberg.

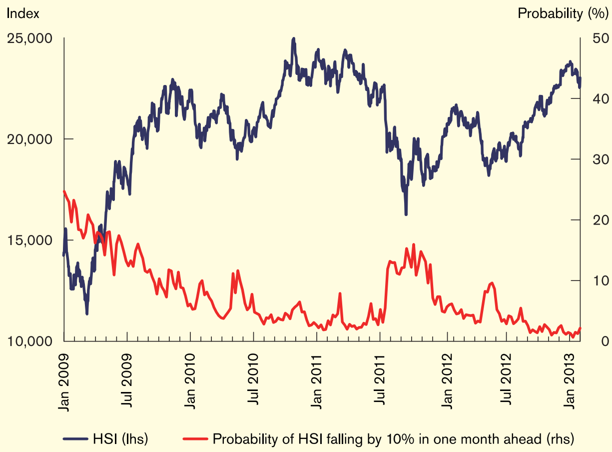
With the valuation of local equities staying well below the historical average, the downside risk of the market, as measured in terms of the probability of a 10% fall in the HSI in one month ahead, appears limited in the near term (Charts 4.25 and 4.26). That said, the recent rally has to a large extent been propelled by optimism that economic activity will gather pace in the US, the European sovereign debt crisis will ease further and the Mainland economy has bottomed out. However, the reality is that the most fundamental fiscal issues in the US and Europe remain unresolved while the strength of the nascent pick-up in economic activity in the Mainland remains in doubt. The impact from the wrestling between political parties in the US and Europe and the speed of them being able to come to terms with solutions to sensitive policy issues will shake confidence sporadically and cause volatility. At the same time, geopolitical tensions stemming from a possible nuclear test in North Korea and the sovereign issue of the Diaoyu islands could also impact the market at some stage. All these factors suggest that the local equity market is unlikely to have a smooth ride in the period ahead.

Chart 4.25
Cyclically adjusted price-earnings ratios of the Hang Seng Index and Hang Seng China Enterprises Index



Sources: Bloomberg and HKMA staff estimates.

Chart 4.26
Hang Seng Index and its option-implied probability of falling by 10% in one month ahead

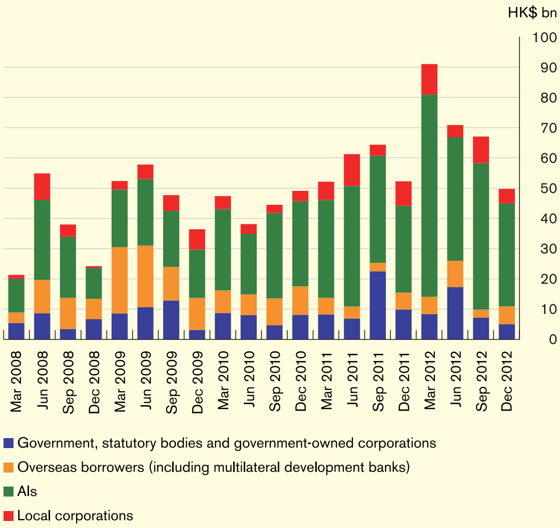


Sources: Bloomberg and HKMA staff estimates.

4.5 Debt market

The Hong Kong dollar debt market maintained strong growth in 2012. Total new issuance grew 2.8% to HK$2,130.4 billion, with the private sector issuing HK$57.6 billion or 31.6% more debt than the year before. Notwithstanding this, the Exchange Fund remained the largest issuer, followed by AIs and then local corporations (Chart 4.27). [21]

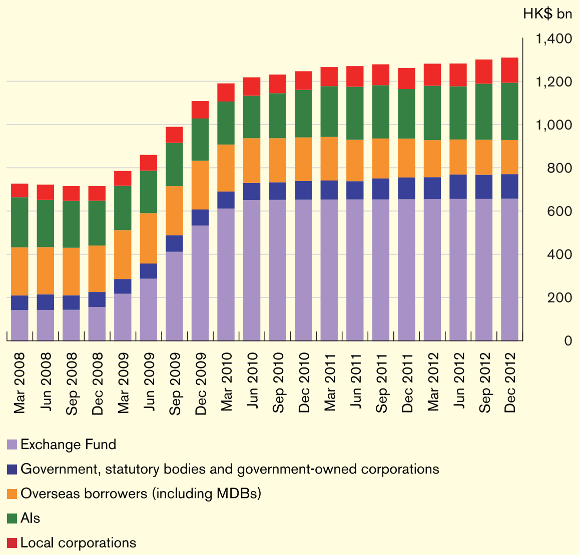
Chart 4.27
New issuance of non-Exchange Fund Bills and Notes Hong Kong dollar debt



Source: HKMA.

At the end of 2012, the total amount of Hong Kong dollar debt outstanding stood at HK$1,308.8 billion, a 3.8% increase from a year ago. The local private sector, which is composed of AIs and local corporations, issued significantly more debt than matured. [22] In contrast, a significant portion of matured private overseas debt was not rolled over. Despite issuing 25.0% more debt in 2012, overseas borrowers excluding multilateral development banks (MDBs) saw their debt outstanding contract by 9.8% (Chart 4.28).

Chart 4.28
Outstanding Hong Kong dollar debt



Source: HKMA.

It appears that the corporate sector has been more able to tap the debt market, especially at the longer end of the yield curve. Reflecting this, the proportion of newly issued private sector debt (excluding CDs) maturing in five years or more increased to 50.3% of new issuances last year compared to 32.3% in 2011. The average maturity of these debt securities also lengthened

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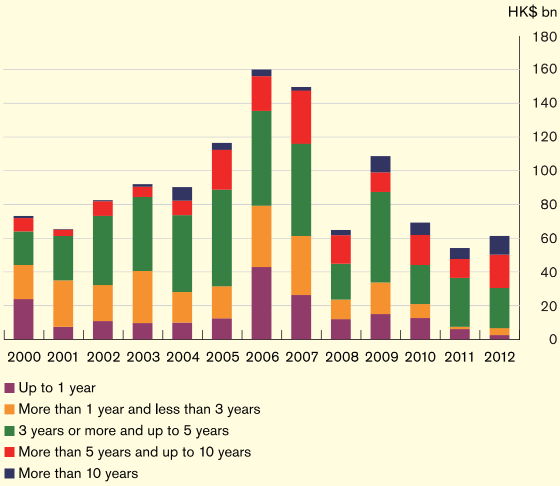
21 The Exchange Fund accounted for 86.9% of new Hong Kong dollar debt issuances. Debt issued by AIs jumped by 39.4% to HK$190.1 billion. New debt issued by local corporations declined by 2.1% to HK$27.7 billion.

22 Although local corporations issued 2.1% less debt in 2012 than 2011, their amount of debt outstanding surged 19.4% year on year with a net issuance of HK$18.9 billion. The amount of AI debt outstanding also increased by 15.0% year on year with a net issuance totalling HK$34.4 billion.

to 7.4 years in 2012 from 5.7 years in 2011 (Chart 4.29). [23]

Chart 4.29
New issuance of Hong Kong dollar private sector debt (excluding CDs) by tenor

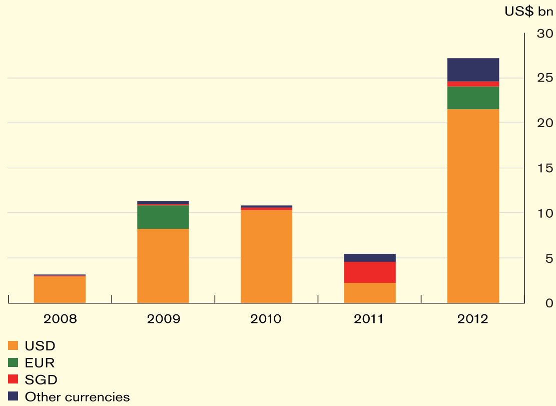


Note: The "private sector" consists of AIs, local corporations and non-MDB overseas borrowers.

Source: HKMA.

The non-bank corporate sector tapped the foreign currency debt market even more aggressively. [24&25] In 2012, total foreign currency debt issued by local non-bank corporations amounted to US$27.1 billion, almost five times the previous year (Chart 4.30). Most notably, US dollar debt securities issued by local non-bank corporations rose by more than eight times to US$21.4 billion.

Chart 4.30
New issuance of foreign currency debt securities by local non-bank corporations



Note: Money market debt securities and CDs are excluded from calculations.

Source: Dealogic.

The phenomenal growth of the foreign currency debt market was driven by a mix of cyclical and structural factors. The most important cyclical factor is probably the current low interest rate environment which has fuelled the search for yield globally, thus allowing corporations to raise funds at relatively lower costs. On the structural side, the reluctance of banks in extending long-term loans amid regulatory changes has to a certain extent forced corporations to turn to the bond market for meeting their long-term financing needs. [26]

The Hong Kong offshore renminbi debt securities market has gradually become more mature. It grew steadily in 2012. In total, RMB 271.3 billion worth of debt securities were issued in 2012, almost 1.5 times the RMB188.2 billion recorded in 2011. [27] At the end of December 2012, the value of debt securities outstanding stood at a

[23] Perpetual debt securities are excluded from the calculations of average maturity.

[24] The "non-bank corporate sector" includes statutory bodies, government-owned corporations and domestically domiciled corporations.

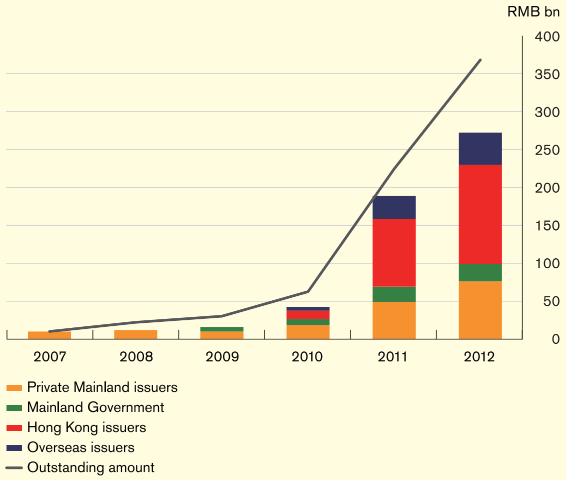
[25] The foreign currency debt market here does not include debt securities denominated in renminbi.

[26] For example, banks are likely to find it less attractive to extend long-term loans in light of the new liquidity requirements under Basel III.

[27] Debt securities include both medium and long-term notes, CDs and commercial papers.

record high of RMB366.8 billion (Chart 4.31). Last year saw the issuance of CDs soar by 86.3% to RMB143.6 billion.

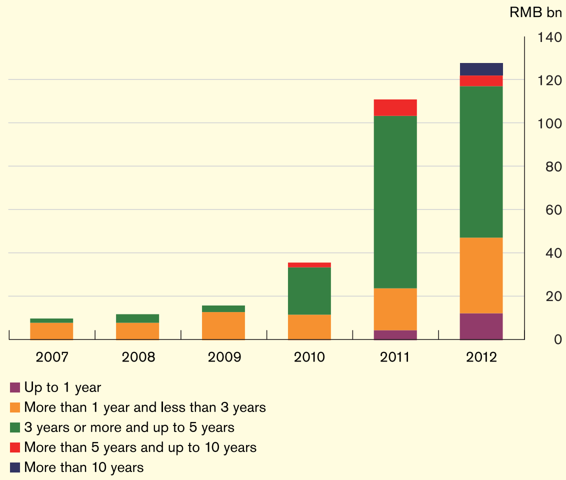
Chart 4.31
New issuance and outstanding amounts of offshore renminbi debt securities



Sources: Newswires and HKMA staff estimates.

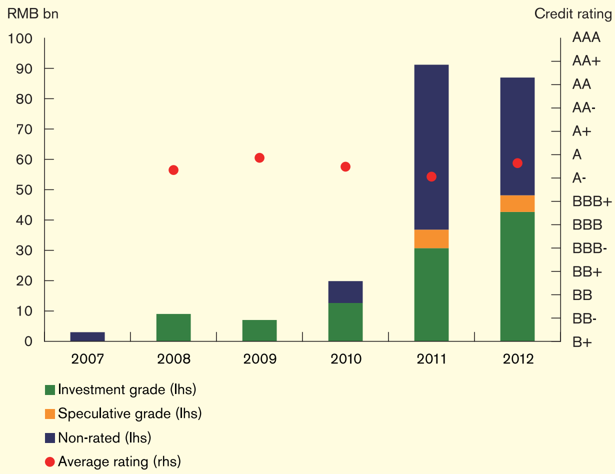
Apart from market size, many other positive developments in 2011 continued to be evident in 2012. First of all, there was a more diversified issuer mix in the market, with a number of new overseas companies tapping the market for the first time. [28] A total of RMB42.5 billion debt securities were issued by companies whose headquarters are located outside Hong Kong and the Mainland in 2012, up remarkably by 40.0% from a year ago. Second, the length of maturity of new issuance increased, albeit only marginally, with the average maturity of newly issued debt (excluding CDs) rising to 3.5 years in 2012 from 3.4 years in 2011 (Chart 4.32). The yield curve was also extended with a few bond issues maturing in more than 10 years. [29] Finally, the credit quality of debt securities has improved. Of the total issuance (excluding the Ministry of Finance and Mainland policy banks), the proportion of rated new issues increased considerably to 55.3% in 2012 from 40.4% in 2011 (Chart 4.33). Within rated new issues, the proportion of investment grade debt securities increased to 88.7% from 83.4%, which raised the average rating of the rated new issues almost to single-A rating.

Chart 4.32
New issuance of non-CD renminbi debt securities by tenor



Sources: Newswires and HKMA staff estimates.

Chart 4.33
Average credit rating of new issuances (excluding CDs)



Note: Excluding debt securities issued by the Ministry of Finance and Mainland policy banks.

Sources: Newswires and HKMA staff estimates.

[28] For example, Volvo and Renault SA issued their first offshore renminbi bond in the final quarter of 2012.

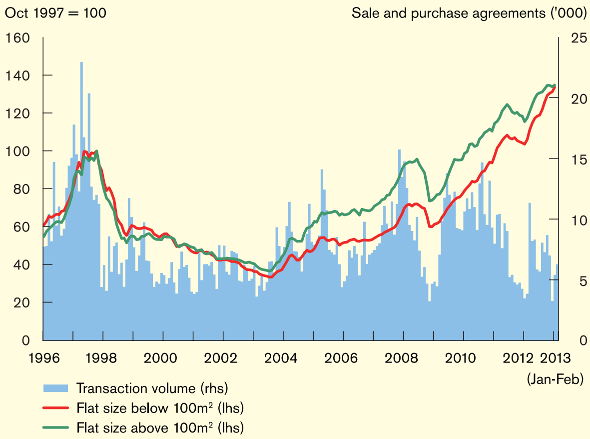
[29] The China Development Bank issued a 15-year note and a 20-year note in January and August 2012 respectively. The Ministry of Finance and Export-Import Bank of China issued a 15-year note in June 2012.

4.6 Property markets

Residential property market

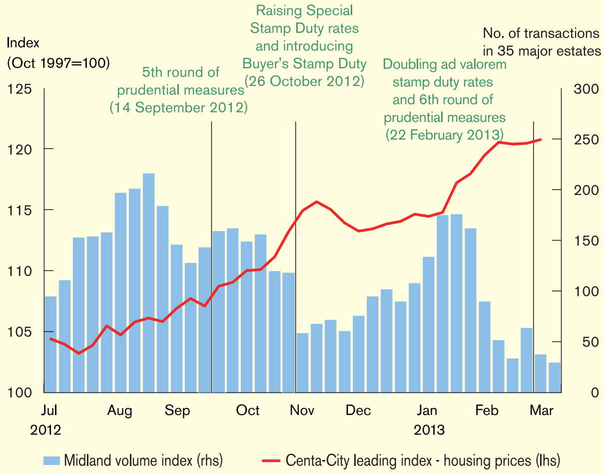
Risks in the residential property market continue to be a major concern for macroeconomic and financial stability in Hong Kong, with increasing disconnect between flat prices and economic fundamentals. In contrast to tepid income growth, flat prices increased notably by 25.2% in 2012 and more than doubled from the end of 2008, against the backdrop of a low interest rate environment, rising income and tight supply conditions (Chart 4.34). Expectations for further price rises also apparently had fuelled the sharp increase. The run-up in flat prices moderated in the fourth quarter of 2012 with the introduction of prudential measures and fiscal measures in September and October the same year, though with signs of a faster pick-up in early 2013. (Chart 4.35).

Chart 4.34
Residential property prices and transaction volumes



Sources: R&VD and Land Registry.

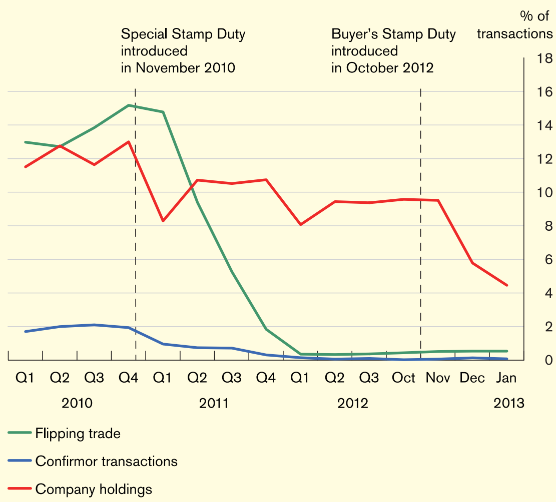
Chart 4.35
Residential property prices and transaction volumes estimated by realties



Sources: Midland Realty and Centaline Property Agency Limited.

The volume of housing transactions has been volatile. Housing transactions strengthened somewhat in the third quarter of 2012, but fell quite markedly in the fourth quarter. Moving into 2013, housing transactions picked up in January but moderated again in February due partly to the holiday effect of the Chinese New Year. Speculative activities, as indicated by confirmor transactions and flipping trade (selling within 12 months of holding), remained largely contained (Chart 4.36). Company holdings have dropped after the introduction of the Buyer's Stamp Duty (BSD).

Chart 4.36
Confirmor transactions, flipping trade and company holdings



Source: Centaline Property Agency Limited.

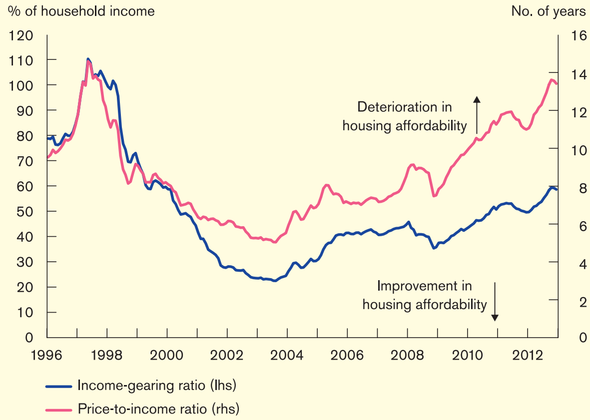
Housing rentals for fresh leases leaped by 11.2% in 2012, compared with a milder 6.6% increase in 2011. With housing rentals rising at a much slower pace than prices, flat rental yield dropped to a historical low of 2 – 3% (Chart 4.37). From an asset-pricing perspective, the currently low rental yield also signals risk of housing prices running ahead of the fundamentals. User-cost models further indicate that strong expectations for further price rises could have contributed to the sharp rise in the cost of owning a flat compared with renting one.

Chart 4.37
Housing rental yield for fresh leases

Source: R&VD.

Another sign of vulnerability is the continued deterioration in housing affordability. Compared with flat prices, growth in private household income has been a lot more gradual at 1.7% in 2012 and a cumulative 20.0% over the past four years. To illustrate, the HKMA's estimated price-to-income ratio, at 13.4 at the end of 2012, has come quite close to the peak of 14.6 reached in 1997 (Chart 4.38). [30] The income-gearing ratio also rose to a 12-year high of around 60%. Moreover, if the mortgage interest rate were much higher, say three percentage points above the current level, the income-gearing ratio would have reached an even more acute level of almost 80%. [31]

Chart 4.38
Indicators of housing affordability



Sources: R&VD, C&SD and HKMA staff estimates.

Current and prospective borrowers should be mindful about the risk of interest rate hikes in the period ahead. When interest rates return to more normal levels, mortgage burden could rise substantially. In a stressed scenario of a three-percentage-point rise in the interest rates, borrowers' monthly mortgage payment could increase by 30% under a 20-year mortgage and by about 45% under a 30-year mortgage. It is also worth noting that interest rate hikes could pose downward pressures on flat prices. A significant fall in housing prices, if realised, could translate into a negative feedback loop of macro-financial vulnerability through private-sector deleveraging and plunge the economy into recession.

In order to strengthen banks' risk management in property lending business, the HKMA introduced a further round of prudential measures in September last year. As a result, the average loan-to-value (LTV) ratio dropped from 64% before policy measures to 56% recently and the average debt-servicing ratio from 42% to 36%. In October, the Government raised the

30 The mortgage payment-to-income ratio compares the amount of mortgage payment for a typical 50 m² flat (under a 20-year mortgage scheme with a 70% LTV ratio) with the median income of households living in private housing. Alternately, the price-to-income ratio measures the average price of a typical 50 m² flat relative to the median income of households living in private housing.

31 This income-gearing ratio is not the same as a borrower's actual debt-servicing ratio, which is subject to a maximum cap by the HKMA prudential measures.

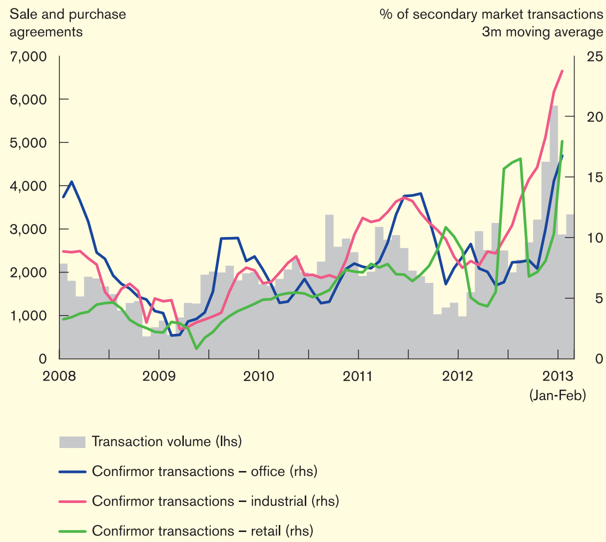
Special Stamp Duty (SSD) rates from 5 – 15% to 10 – 20%, and extended the restriction period from two years to three. The Government also implemented a BSD of 15% on residential properties acquired by companies and non-locals. As discussed earlier, there are signs of moderation in company holdings since then. Anecdotal observation also suggests non-local purchases have declined. In February 2013, the Government introduced further measures by generally doubling the rates of existing ad valorem stamp duties. The HKMA imposed stricter stress testing requirements for mortgage lending, and introduced a risk weight floor of 15% for new residential mortgage lending by banks using the internal ratings-based approach. Also, a few leading banks raised the mortgage interest rates by 25 basis points in mid-March, reportedly in response to higher funding costs.

As regards the outlook, the disconnect between flat prices and economic fundamentals could still aggravate further. Upward pressures on flat prices could persist with the current tight supply condition, low interest rates and more entrenched expectations for further price increase. Improved market sentiment amid better growth outlook and abundant liquidity following more aggressive monetary easing in advanced economies could also exert upward pressures on flat prices. On the downside, interest rates could rise earlier than expected. Tail risks in the global economy and the financial markets also have not vanished, and if realised, could drag down flat prices. The HKMA will continue to monitor the market situation closely and introduce appropriate measures in response to changes in the property market cycle to safeguard macroeconomic and financial stability in Hong Kong. Home purchasers should stay vigilant on property market and interest rate developments and avoid stretching themselves with excessive borrowing.

Commercial and industrial property markets

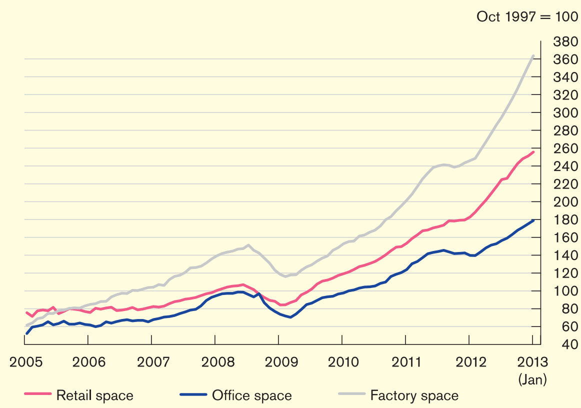
The overall conditions of the commercial and industrial property markets were even more buoyant than the residential market, with both trading activities and prices rising sharply. Total transactions increased by 51% in the second half of 2012 from the preceding half year period, with sharp spikes in November and December partly due to strong sales in parking spaces. Speculative activities, as indicated by confirmor transactions, continued to be vibrant (Chart 4.39). The run-up in prices for commercial and industrial properties accelerated in the second half. For the whole year, prices of office space increased by 22.7%, while prices of retail premises and flatted factories soared by around 40% (Chart 4.40). As rentals increased more moderately, overall rental yields of commercial and industrial properties sank further to a record low of 2.3 – 2.9%.

Chart 4.39
Transactions in commercial and industrial properties



Sources: CEIC, Land Registry, Centaline Property Agency Limited and HKMA staff estimates.

Chart 4.40
Commercial and industrial property price indices



Source: R&VD.

The strong momentum of the commercial and industrial property markets in part reflected the still-favourable demand conditions, and the limited and inelastic supply. Property values might also have been boosted by urban renewals and re-development opportunities. However, the much steeper surge in sales prices relative to rentals may not be fully explained by fundamental factors, suggesting their growing disconnect and risk of overheating. There is therefore a continuing need for banks to enhance risk management for lending business related to commercial and industrial properties.

In view of the exuberant development in the non-residential property markets, the HKMA announced a new round of prudential measures in February 2013 by lowering the LTV ratio for commercial and industrial properties by 10 percentage points, while a maximum LTV ratio of 40% and loan tenor not exceeding 15 years are also applied to the mortgage lending of parking spaces. To cool the vibrant speculation in the non-residential property markets, the Government has doubled the ad valorem stamp duty rates and advanced the charging of the stamp duty from the conveyance on sale to the agreement for sale.

Box 3
Recent performance of the Hong Kong dollar exchange market

This article reviews recent developments of the Hong Kong dollar exchange market and exchange rate dynamics since May 2005, when a symmetric convertibility zone was introduced with a strong-side Convertibility Undertaking (CU) at 7.75 HKD/USD and a weak-side CU at 7.85.

An overview of the Hong Kong dollar market and its recent developments

Market depth

The market depth of the Hong Kong dollar has increased substantially in recent years. As a result, the Hong Kong monetary system is in a strong position to accommodate substantial amounts of fund flows with minimal market disruptions. According to latest available Bank for International Settlements (BIS) data, the average daily foreign exchange market turnover of Hong Kong dollar amounted to US$94 billion in 2010, more than 6 times the level in 1998 (Table B3.A). Of the total turnover, spot transactions amounted to US$18.7 billion, which are comparable to other major ex-Japan Asian currencies, while foreign exchange swaps amounted to US$69.5 billion and compare favourably with other major regional currencies, other than the yen.

Market liquidity

The Hong Kong dollar market is highly liquid, as shown by its narrow bid-ask spread that averaged 0.01% during the study period from January 1997 to November 2012 (Table B3.B). [32]

[32] In this article, bid-ask spread is expressed as a percentage of the closing price.

Table B3.A
Average daily foreign exchange market turnover

Currency	2010 US$ bn	2010 Share (%)	1998 US$ bn	1998 Share (%)
HKD	94	1.2	14	0.5
Major currencies				
USD	3,378	42.4	1,251	43.4
EUR	1,555	19.5	442 *	18.8 *
JPY	755	9.5	313	10.9
GBP	513	6.4	159	5.5
AUD	302	3.8	44	1.5
Major Asian currencies				
KRW	60	0.8	2	0.1
SGD	56	0.7	16	0.6
CNY	34	0.4	0.2	0.0
MYR	11	0.1	0.5	0.0
THB	8	0.1	2	0.1
IDR	6	0.1	1	0.0

Notes:
1. The reference month is April of the respective year.
2. In BIS data, foreign exchange trading covers spot transactions, outright forward, foreign exchange swaps, currency swaps, options and other products. For the Hong Kong dollar market, the average daily turnovers of the first five types of contracts in April 2010 were US$18.7 billion, US$3.7 billion, US$69.5 billion, US$0.3 billion, and US$1.7 billion respectively.
3. Figures in asterisk refer to turnovers obtained by the 2001 survey, the first triennial survey after the introduction of the euro.

Source: BIS.

Table B3.B
Average foreign exchange bid-ask spread of the Hong Kong dollar, major and other Asian currencies

Episode (%)	Full sample period (1/1997-11/2012)	Before 2-sided CU (1/1997-5/2005)	After 2-sided CU (5/2005-11/2012)	Weak HKD episode (1/2007-9/2007)	Strong HKD episode (10/2008-12/2009)	Strong HKD episode (9/2012-11/2012)
HKD	0.01	0.009	0.01	0.013	0.011	0.004
Major currencies						
EUR	0.024	0.044	0.008	0.008	0.009	0.007
JPY	0.03	0.045	0.013	0.011	0.014	0.011
Major Asian currencies						
CNH[2, 3]	0.077	n.a.	0.077	n.a.	n.a.	0.047
CNY	0.023	0.024	0.021	0.026	0.026	0.08
SGD	0.059	0.057	0.061	0.051	0.113	0.035
THB	0.203	0.235	0.168	0.062	0.241	0.066
IDR	0.465	0.656	0.253	0.141	0.648	0.298
MYR	0.118	0.141	0.091	0.097	0.163	0.095
KRW	0.119	0.112	0.126	0.068	0.219	0.18

Notes:
1. Period average of daily closing.
2. Periods cover from August 2010 as CNH market only then started.
3. n.a.: not applicable as CNH market only started in August 2010.

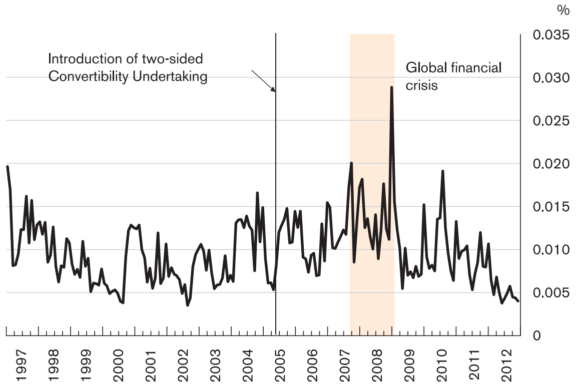
Source: HKMA staff estimates based on data from Bloomberg.

The spread also compares favourably with most other currencies. Even during crisis periods such as the Asian financial crisis and the recent global financial crisis, the spread did not widen

drastically, and it narrowed back to its normal level soon in subsequent months (Chart B3.1).

In addition, it is noteworthy that market liquidity conditions remained relatively stable during episodes of large capital flows, as the bid-ask spread showed only mild changes when the Hong Kong dollar moved near the strong-side or weak-side limits.

Chart B3.1
Bid-ask spread of USD/HKD exchange rate



Note: Period average figures of respective months.
Source: HKMA staff estimates based on data from Bloomberg.

Market Volatility

The HKD/USD exchange rate has been relatively more stable compared with major and other Asian currencies (Table B3.C), partly reflecting its link to the US dollar. The volatility, as measured by the annualised standard deviations of changes for 30 days, averaged 0.5% since the introduction of the two-sided CU, significantly lower than other currencies [33]. While the Hong Kong dollar volatility increased during the renminbi revaluation speculation in 2003 and the global financial crisis in 2007-08, it subsided rapidly as the situations stabilised, suggesting that the CU is credible in anchoring market expectations about future movements of the Hong Kong dollar. Similar trends were also observed for the three-month HKD/USD option-implied volatility (Chart B3.2). In addition, volatility did not show substantial increases when the Hong Kong dollar was near the strong-side or weak-side limits, and remained significantly lower than major and other Asian currencies during respective periods.

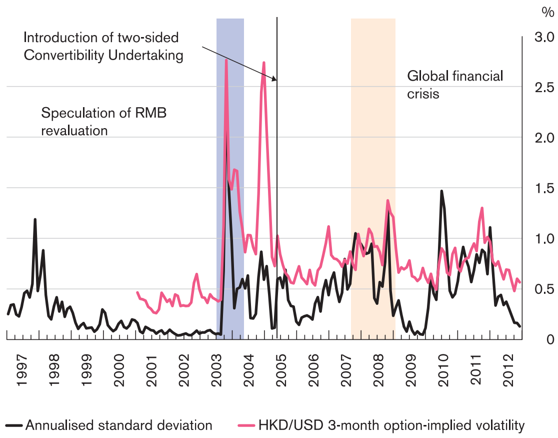
Table B3.C
Average foreign exchange volatility of the Hong Kong dollar, major and other Asian currencies

Episode (%)	Full sample period (1/1997-11/2012)	Before 2-sided CU (1/1997-5/2005)	After 2-sided CU (5/2005-11/2012)	Weak HKD episode (1/2007-9/2007)	Strong HKD episode (10/2008-12/2009)	Strong HKD episode (9/2012-11/2012)
HKD	0.38	0.28	0.49	0.55	0.24	0.15
Major currencies						
EUR	10.15	10.38	9.96	5.48	13.94	7.37
JPY	10.53	10.96	10.04	8.02	15.3	6.37
Major Asian currencies						
CNH[2, 3]	2.4	n.a.	2.4	n.a.	n.a.	1.36
CNY	0.76	0.05	1.54	1.55	1.03	3.19
SGD	5.45	5.45	5.45	3.04	7.25	3.58
THB	6.87	9.07	4.43	5.05	3.94	3.06
IDR	16.14	22.57	8.99	7.86	19.19	2.92
MYR	4.97	4.18	5.84	3.86	7.94	6.43
KRW	10.8	10.61	11	4.14	25.37	3.61

Notes:
1. Period average of daily closing.
2. Periods cover from August 2010 as CNH market only then started.
3. n.a.: not applicable as CNH market only started in August 2010.
4. Volatility is measured by the annualised standard deviations of the daily change of foreign exchange rate for the 30 most recent trading days.

Source: HKMA staff estimates based on data from Bloomberg.

Chart B3.2
Volatility of USD/HKD exchange rate



Sources: HKMA staff estimates based on data from Bloomberg and JP Morgan.

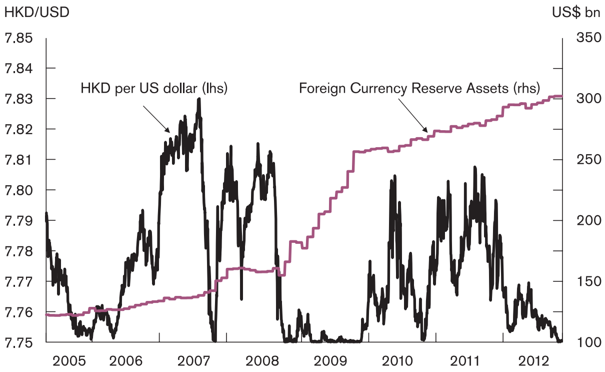
The above development shows that the Hong Kong dollar market has grown further in recent years, characterised by rising transaction volume, relatively narrow spreads and subdued volatility. The existence of a deep and highly liquid Hong Kong dollar market has been conducive to the smooth operation of the Linked Exchange Rate system (LERS).

33 Volatility is measured by the annualised standard deviations of daily changes of foreign exchange rate for the 30 most recent trading days.

Hong Kong dollar in a target zone

The LERS was refined into a target zone system in May 2005 when a symmetric convertibility zone was introduced with a strong-side CU at 7.75 HKD/USD and a weak-side CU at 7.85. In the policy literature, it is typically argued that, if a currency follows a mean-reverting process around the central parity [34], which may be driven either by within-zone central bank intervention or "stability speculation" by market participants, then the target zone is perceived to be credible. [35] However, the Hong Kong dollar exchange rate did not seem to have exhibited a mean-reverting movement around the central parity, as shown in Chart B3.3.

Chart B3.3
Foreign reserves and USD/HKD exchange rate in the convertibility zone



Source: HKMA.

To understand the performance of the LERS, we propose an analytically tractable model of exchange rate dynamics in a fully credible target zone, and apply the proposed model to the Hong Kong dollar. In essence, we hypothesise that the exchange rate follows a random walk most of the time. When the exchange rate is "well within" the band, market participants do not feel particularly compelled or encouraged to pull the exchange rate towards its central parity. However, when the exchange rate moves closer to the boundaries, the market may anticipate an intervention and would therefore act to stabilise the exchange rate or even push it away from the boundaries. Hence, we have a bounded process with a stopping/restoring effect that only occurs close to the boundaries of the zone but not necessarily around the central parity. The intervention policy of the central bank and the behaviour of market participants are described implicitly by specifying the restoring force and fluctuating force (volatility) of the exchange rate dynamics.

As shown in Chart B3.3, after trading within a relatively wide range between May 2005 and August 2008, the Hong Kong dollar exchange rate strengthened towards the strong-side CU of 7.75 after September 2008 due to capital inflows, with the strong-side CU triggered repeatedly until early December 2009, prompting the HKMA to passively inject liquidity into the banking system. [36] The Monetary Base of the Hong Kong dollar expanded notably by more than two times, and the foreign reserves correspondingly increased. [37] Subsequently, as capital inflows halted, the Hong Kong dollar exchange rate weakened but it continued to stay within the strong-side CU zone for most of the time before appreciating again towards the strong-side limit in the fourth quarter of 2012, due to a renewed round of capital inflows.

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[34] P. Krugman (1991), "Target Zones and Exchange Rate Dynamics", *Quarterly Journal of Economics*, 106, 669-82.

[35] The exchange rate may not exhibit such a property if intervention occurs only at the limits of the target zone.

[36] The capital inflows into the Hong Kong dollar after the global financial crisis intensified in September 2008 is discussed in the inSight article "Latest Analysis of Fund Inflows into the Hong Kong Dollar" by Norman T.L. Chan, issued in the HKMA website on 1 February 2010.

[37] In Hong Kong, the Monetary Base comprises Certificates of Indebtedness (for backing the banknotes issued by the note-issuing banks), government-issued currency in circulation, the balance of the clearing accounts of banks kept with the HKMA (the Aggregate Balance), and Exchange Fund Bills and Notes.

Hong Kong dollar exchange rate dynamics

To investigate whether the above tractable model with quasi-bounded process for exchange rate dynamics can describe movements in the Hong Kong dollar and if the LERS is perceived by the market as credible, we estimate the following three factors of the dynamics [38]:

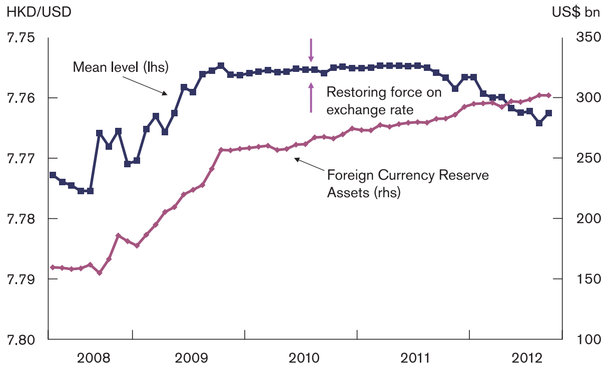
(i) the medium-term mean level for the exchange rate;

(ii) the restoring force towards the mean level; and

(iii) the fluctuating force (volatility).

Using the daily time series data from 18 May 2005 to 31 October 2012, we find that these three factors are all statistically significant.[39, 40] Chart B3.4 shows that the estimated mean level of the Hong Kong dollar exchange rate moved towards the strong-side limit when there were strong capital inflows during 2009. [41] Having stayed persistently near the strong-side limit, the mean level moved back to close to it previous level prior to the inflows, as capital flows halted.

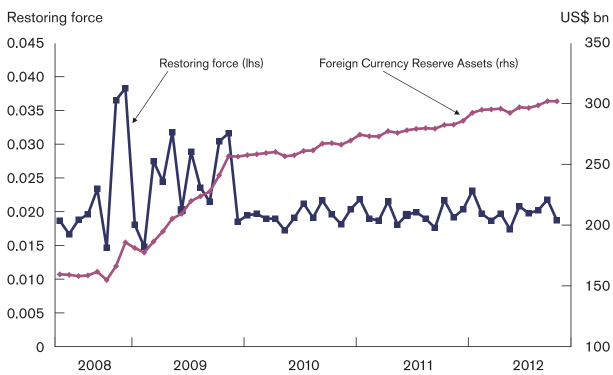
Chart B3.4
Estimated mean level of HKD exchange rate



Sources: HKMA and staff estimates.

The empirical analysis reveals a positive relationship between the restoring force and changes in foreign reserves, largely caused by capital flows, as indicated in Chart B3.5. [42] Thus, when the mean level of exchange rate moves towards its strong-side limit as a result of capital inflows, the tendency to mean reversion can act as a force reducing the stickiness of the exchange rate near the strong-side limit. In other words, when the strong-side CU is triggered, the restoring force that pushes the exchange rate away from the limit and towards its previous mean level would increase. Such dynamics suggest that any triggering of the strong-side CU is anticipated to be temporary by the currency market.

Chart B3.5
Estimated restoring force towards the mean level of HKD



Sources: HKMA and staff estimates.

38 In finance literature, the second term refers to the speed of the mean reversion towards the mean level, while the third term refers to the standard deviation of the daily change in the Hong Kong dollar.

39 The detailed analysis is in C. F. Lo, C. H. Hui, S. W. Chu, T. Fong (2012), "A Quasi-Bounded Target Zone Model – Theory and Application to Hong Kong Dollar", *Hong Kong Institute for Monetary Research Working Paper*, No. 28/2012.

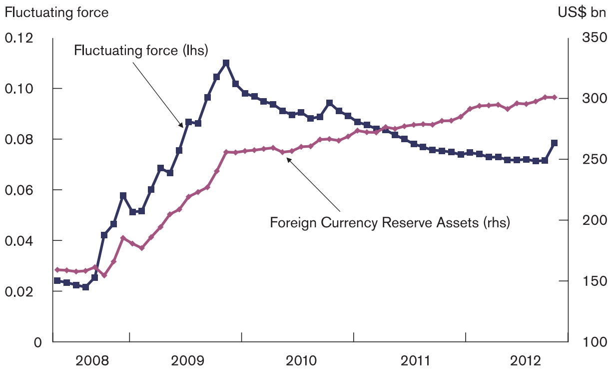
40 In this study, instead of using the Monetary Base of the Hong Kong dollar as a proxy as in the detailed analysis in Lo et al. (2012), the official foreign reserves in Hong Kong is employed. However, as the time series of official foreign reserves is only available in monthly frequency, to construct a daily time series of official foreign reserves, its daily changes are approximated by the daily changes in the Monetary Base of the Hong Kong dollar.

41 This mean level is an estimate of where the Hong Kong dollar usually fluctuates around during a specific period of time.

42 The restoring force has a positive slope with the changes in foreign reserves in the regression estimation.

Chart B3.6 shows the fluctuating force (volatility) of the exchange rate. The volatility increased along with the inflows of capital into the Hong Kong dollar (i.e. increases in foreign reserves) during the period between September 2008 and November 2009, which pushed the mean exchange rate towards the strong-side CU limit. During the period from November 2009 to September 2012 when there were no further capital inflows, the fluctuating force decreased and the exchange rate moved away from the strong-side boundary. In the fourth quarter of 2012, the fluctuating force is estimated to have increased again due to capital inflows, with the mean exchange rate moving close to the strong-side CU limit once again.

Chart B3.6
Estimated fluctuating force of HKD exchange rate



Sources: HKMA and staff estimates.

Conclusion

After the introduction of a target-zone system to the LERS in May 2005, the Hong Kong dollar showed no strong tendency to revert towards the centre of the convertibility zone. This is perhaps not surprising as there have been no active interventions in the foreign exchange market by the HKMA, other than acting passively when the strong-side CU was triggered. When the Hong Kong dollar exchange rate is "well within" the band, market participants do not feel compelled or encouraged to pull the exchange rate towards the central parity. However, when the exchange rate moves closer to the boundaries, a stopping/reversion effect occurs.

The restoring force in the exchange rate dynamics, which pushes the exchange rate towards the mean level, increases with the foreign reserves and reduces the stickiness of the exchange rate near the strong-side limit. Such property suggests that any triggering of the strong-side CU is anticipated to be temporary by the currency market.

Box 4
Determinants of the growth of renminbi deposits in Hong Kong

In Hong Kong, banks started to take renminbi deposits from personal customers in February 2004. With the launch of renminbi trade settlement in July 2009, renminbi deposits had since seen phenomenal growth. Having reached a plateau at the end of 2011, the deposits declined slowly through the middle of 2012. Growth resumed towards late 2012. In light of the recent development, this article studies the key factors determining the growth of renminbi deposits in Hong Kong.

In theory, portfolio allocation by Hong Kong and overseas personal and corporate customers into renminbi deposits is mainly influenced by two factors, namely, the level of economic activity – a major source of income and wealth accumulation – and the expected rate of return. In the case of corporate customers, the growing popularity of renminbi as a cross-border settlement currency also boosts corporate demand. The expected rate of return of holding renminbi deposits not only depends on the interest rate differential between renminbi and Hong Kong dollar deposits, but also the expectation of exchange rate changes, which holds key to what determines the opportunity cost of not holding renminbi deposits.

With the above factors in mind, we regress the monthly change in renminbi deposits (*DEP_RMB*) during May 2004 to December 2012 on five explanatory variables: (1) the risk-adjusted renminbi-Hong Kong dollar deposit rate differential (*ID_RMBHKD*) and (2) the discount rate of the one-year renminbi non-deliverable forwards (*DIS_NDF*) which proxies the expected appreciation of renminbi; (3) real GDP growth (*RGDPG*) which measures the level of economic activity in Hong Kong; (4) the amount of net renminbi remittances for trade settlement purpose (*TR_SET*) for capturing the effect of cross-border trade settlement in renminbi on the growth of renminbi deposits in Hong Kong; and (5) one-month lag term of renminbi deposits to take account of the growth momentum of renminbi deposits.

The regression results are summarised in Table B4.A. All explanatory variables are found to be significantly positive, suggesting that, other things being equal, the growth of renminbi deposits would rise when (1) the risk-adjusted return of renminbi deposits goes up (due to larger interest rate differential, higher expectations of renminbi appreciation or lower implied exchange rate volatility); (2) real GDP growth accelerates; or (3) the net inflow of renminbi remittances for trade settlement purpose increases.

Table B4.A
Estimation results of renminbi deposits growth

Dependent Variable: Δ(*DEP_RMB*)
Sample period: May 2004 – Dec 2012

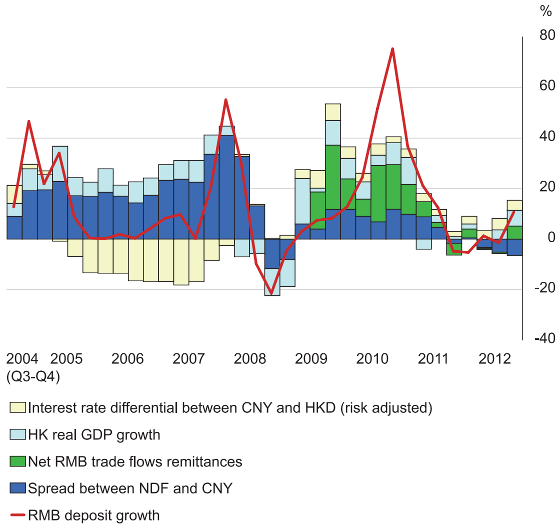
Independent Variable	Coeff	t-statistic	p-value
Intercept	-0.011	-1.477	0.143
ID_RMBHKD	0.027**	2.238	0.028
DIS_NDF	0.761***	3.041	0.003
RGDPG	2.331*	1.969	0.052
TR_SET	0.026***	2.983	0.004
lag of Δ(*DEP_RMB*)	0.478***	6.333	0.000
Sample size	116		
Adjusted R-squared	0.607		
Ljung Box test statistic for zero residual autocorrelations (p-value)	11.205 (0.511)		
Ljung Box test statistic for zero squared residual autocorrelations (p-value)	7.360 (0.833)		

Note: ***, ** and * denote significance at the 1%, 5% and 10% levels respectively.

Based on these results, we carry out a simple attribution analysis of the factors driving the growth of renminbi deposits over the sample period. Chart B4.1 shows how much of the quarterly change in renminbi deposits (represented by the red line) is attributable to each of the factors in the long term.[43] Prior to the global financial crisis, expectations of renminbi appreciation accounted for most of the growth, followed by real GDP growth. Interest rate differential was mostly a drag on the growth in this period. During the crisis, renminbi deposits actually fell, due mainly to the slowing economy and reduced expectations of renminbi appreciation. After the crisis, the growth of renminbi deposits regained momentum again, with cross-border trade settlement emerging as the key driving force. Expectations of renminbi appreciation were also an important factor but much less so compared to the pre-crisis period. Finally, over the past year or so, as change in all these factors have been relatively moderate, the growth of renminbi deposits has also slowed accordingly.

Looking forward, the demand for renminbi deposits is likely to remain robust, as growth of the Hong Kong and the global economy recovers, and as the relative return to renminbi assets is expected to remain attractive. There will also be new driving forces coming in play, as new policy initiatives take effect and the currency becomes more internationalised and increasingly accepted for payment in the region. As capital flows into and out of Mainland China become more balanced and the renminbi exchange rate becomes more flexible, one such driving force will be the demand for renminbi loans by borrowers based in Hong Kong, the Mainland, and also from overseas. Hence, future studies will have to take into account new developments to provide a more comprehensive picture of the determinants.[44]

Chart B4.1
Decomposition of long-term renminbi deposits growth



Sources: HKMA and staff estimates.

43 The estimation of the long-term attributions assumes that, other things being equal, renminbi deposit growth will converge to an equilibrium level in the long run so that the growth (i.e. $\Delta(DEP\_RMB)$) in the current period is *ceteris paribus* equal to that in the previous period in the estimated equation.

44 For example, the impact of the renminbi qualified foreign institutional investor (RQFII) scheme should also be considered.

5. Banking sector performance

The local banking sector continued to record healthy growth, characterised by steady credit expansion and favourable liquidity conditions. These positive developments took place despite continued deleveraging by euro area banks, as local and other foreign banks moved in to fill the void. Looking ahead, uncertainties regarding fiscal issues in the US and Europe, the continued expansion of the sector's credit exposure to Mainland-related business and risks in the property market will continue to pose challenges to the sector. With strong capital positions by international standards and sound asset quality, banks are well placed to meet the new capital requirements under the Basel III framework.

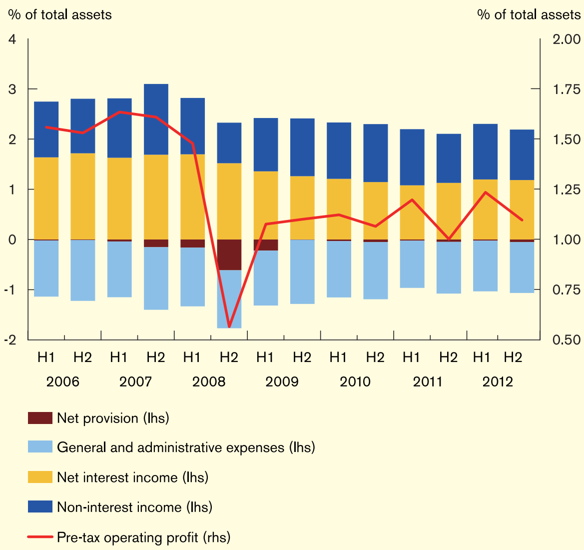
5.1 Profitability and capitalisation

Profitability

The profitability of retail banks [45] moderated during the second half of 2012 from the very buoyant results of the first half, due to lower non-interest income, a rise in operating cost and higher net charges for provisions, which more than offset the increase in interest income. Nevertheless, the performance remained more favourable than the same period of 2011, with retail banks registering a return on assets [46] of 1.1%, compared with 1.24% in the first half of the year and just 1% in the second half of 2011 (Chart 5.1).

For 2012 as a whole, the aggregate pre-tax operating profits of retail banks recorded an increase of 12.7%, with the average return on assets rising to 1.16%, from 1.1% in 2011.

Chart 5.1
Profitability of retail banks



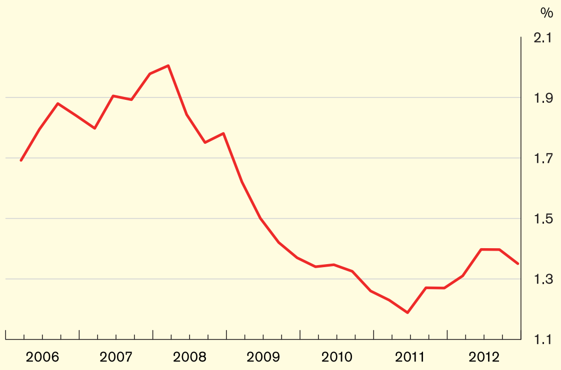
Note: Semi-annually annualised figures.
Source: HKMA.

45 Throughout this chapter, figures for the banking sector relate to Hong Kong offices only, except where otherwise stated.

46 Return on assets is calculated based on aggregate pre-tax operating profits.

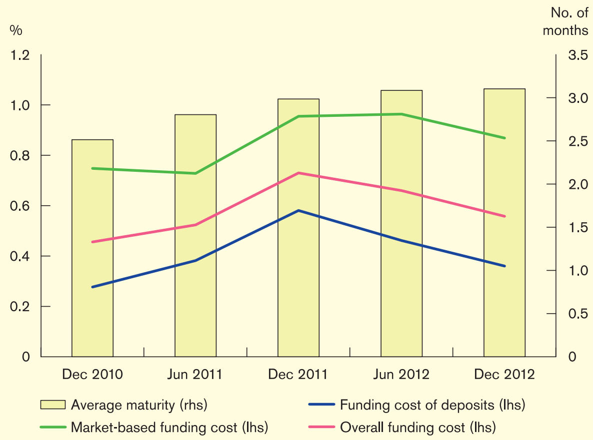
The net interest margin of retail banks improved in the second half of 2012 to an average of 1.37%, from 1.35% in the first half (Chart 5.2), partly due to an easing of banks' funding pressures. For licensed banks as a whole, the interest costs for their Hong Kong dollar and US dollar funding declined across the board in the second half of the year – for both deposits and market-based funding [47] (Chart 5.3). Meanwhile, the composite interest rate, a measure of the average cost of Hong Kong dollar funds of retail banks, decreased by 10 basis points in the second half of 2012 (Chart 5.4).

Chart 5.2
Net interest margin of retail banks



Note: Quarterly annualised figures.
Source: HKMA.

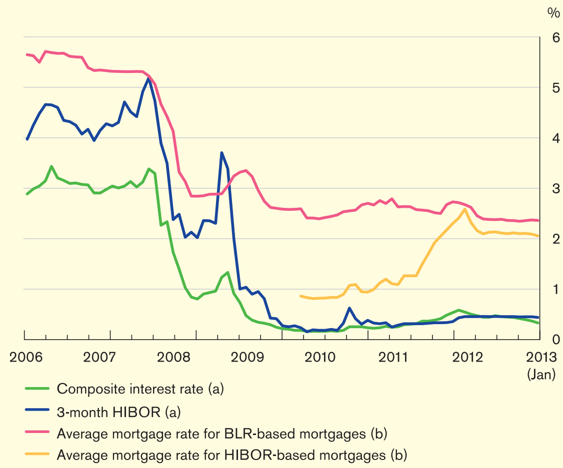
Chart 5.3
Hong Kong and US dollar funding cost and maturity of licensed banks



Source: HKMA.

During the second half of 2012, both best lending rate-based (BLR-based) and HIBOR-based mortgage rates remained broadly stable, with the share of BLR-based mortgages amongst newly approved mortgage loans increasing further to an average of 92.8%, from 92.1% in the first half of the year.

Chart 5.4
Interest rates



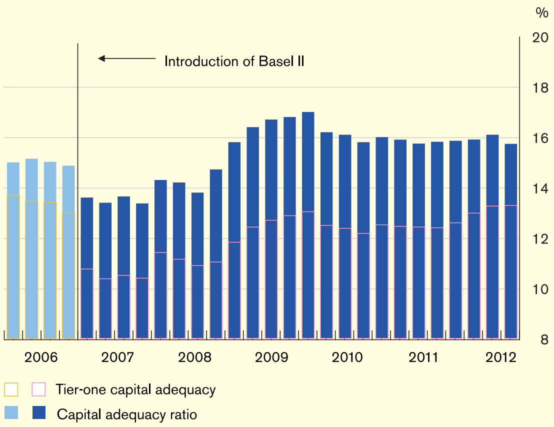
Notes:
(a) End of period figures.
(b) Period-average figures for approved loans. All mortgage rates are estimates only.
Sources: HKMA and staff estimates.

[47] Market-based funding cost is measured by the interest costs of banks' non-deposit interest bearing liabilities.

Capitalisation

Capitalisation of the banking sector remained well above minimum international standards. The consolidated capital adequacy ratio of locally incorporated AIs was stable at 15.7% at the end of 2012, compared with 15.9% six months earlier (Chart 5.5), with the tier-one capital adequacy ratio (the ratio of tier-one capital to total risk-weighted assets) increasing to 13.3%, from 13%.

Chart 5.5
Capitalisation of locally incorporated AIs



Notes:

1. Consolidated positions.
2. With effect from 1 January 2007, a revised capital adequacy framework (Basel II) was introduced for locally incorporated AIs. The capital adequacy ratios from March 2007 onwards are therefore not directly comparable with those up to December 2006.

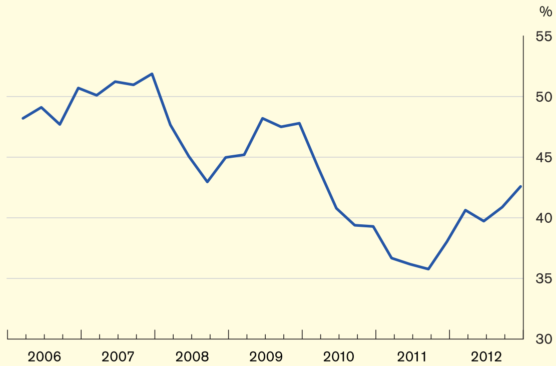
Source: HKMA.

The first phase of the new Basel III framework became effective from 1 January 2013, in accordance with the transitional timeline specified by the Basel Committee. Given their strong capital positions, banks in Hong Kong are well placed to adopt the Basel III standards.

5.2 *Liquidity and funding*

Liquidity conditions continued to be sound, with the average liquidity ratio of retail banks rising to 42.6% at the end of 2012, from 39.7% six months earlier (Chart 5.6), and remaining well above the regulatory minimum of 25%.

Chart 5.6
Liquidity ratio of retail banks

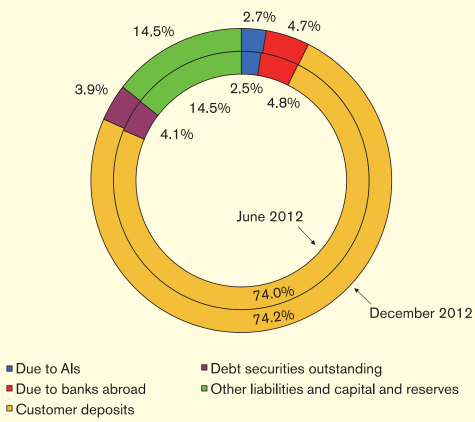


Note: Quarterly average figures.

Source: HKMA.

Customer deposits, which are typically less volatile than other funding sources, continued to be the primary funding source for retail banks. The share of customer deposits to banks' total liabilities rose marginally to 74.2% at the end of 2012, from 74% six months earlier (Chart 5.7).

Chart 5.7
Liabilities structure of retail banks



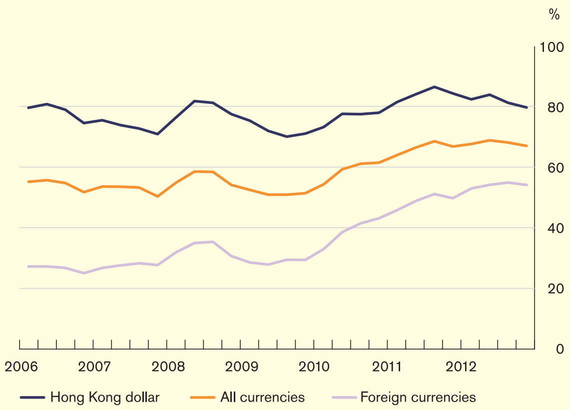
Notes:

1. Figures refer to the percentage of total liabilities (including capital and reserves).
2. Debt securities comprise negotiable certificates of deposit and all other negotiable debt instruments.

Source: HKMA.

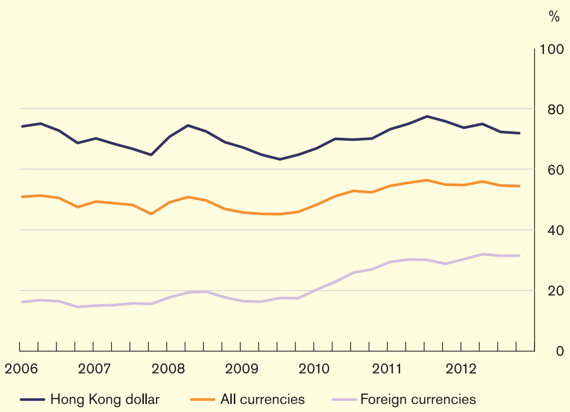
The all currency loan-to-deposit (LTD) ratio of all AIs went down notably to 67.1% at the end of 2012 from 69% six months earlier (Chart 5.8), with the Hong Kong dollar LTD ratio falling to 79.8% and the foreign currency ratio staying unchanged at 54.3%. For retail banks, both the Hong Kong dollar and foreign currency LTD ratios recorded a decline, with the all currency LTD ratio declining to 54.8% from 56.3% (Chart 5.9).

Chart 5.8
Loan-to-deposit ratios of all AIs



Source: HKMA.

Chart 5.9
Loan-to-deposit ratios of retail banks



Source: HKMA.

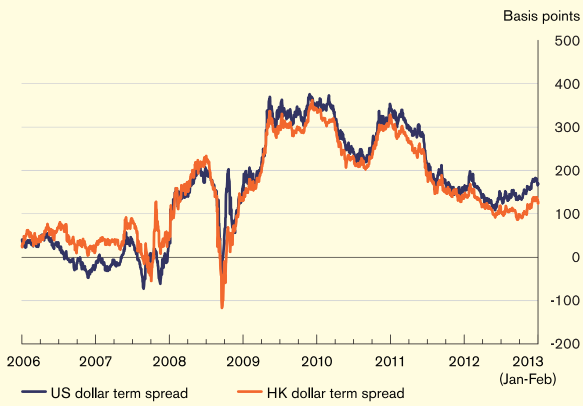
Foreign currency position

The banking sector's capability to repay liabilities denominated in foreign currencies can be assessed by reference to the aggregate net open position of AIs for all foreign currencies. This position amounted to HK$76 billion at the end of December 2012, which was equivalent to 0.5% of total assets of AIs, indicating that the overall exposure of AIs to foreign exchange risks may not be of significant concern.

5.3 *Interest rate risk*

The spreads between the long- and short-term interest rates for the US dollar and Hong Kong dollar widened somewhat towards the end of 2012 and continued their upward trends in early 2013 (Chart 5.10), suggesting that the incentive for banks to search for yield by borrowing short-term funds to purchase long-term interest-bearing assets may have increased. This could potentially lead to greater maturity mismatches and increased interest rate risk. Banks should be watchful in monitoring and managing the potential mark-to-market loss for their financial investments, which could arise from changes in the yield spreads.

Chart 5.10
Term spreads of Hong Kong and US dollars



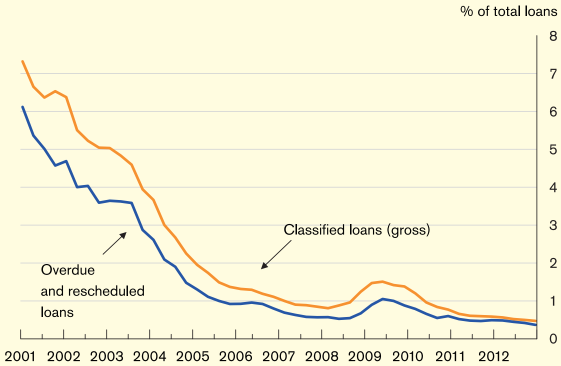
Note: Term spreads are defined as 10-year swap rates minus three-month money market rates of the respective currencies.

Source: HKMA staff estimates based on data from Bloomberg.

5.4 Credit risk

The asset quality of retail banks' loan portfolios improved in general in the second half of 2012, with the classified loan ratio falling further to 0.47% at the end of 2012 from 0.52% six months earlier, and the ratio of overdue and rescheduled loans edging down to 0.37% from 0.45% (Chart 5.11).

Chart 5.11
Asset quality of retail banks



Notes:
1. Classified loans are those loans graded as "sub-standard", "doubtful" or "loss".
2. Figures related to retail banks' Hong Kong office(s) and overseas branches.
Source: HKMA.

Despite continued deleveraging by euro area banks, credit expansion continued as local and other foreign banks moved in to fill the void, with total loans and advances extended by banks growing at a steady pace of 4.7% in the second half of 2012, the same as in the first half.

Looking ahead, banks have turned slightly more positive on credit demand, reflecting a more sanguine economic outlook. According to the results of the HKMA Opinion Survey on Credit Condition Outlook in December, there were more surveyed AIs anticipating an increase in loan demand in the subsequent three months than those anticipating a decline, though a majority of them expected loan demand to remain the same (Table 5.A).

Table 5.A
Expectation of loan demand in the next three months

As % of total respondents	Mar 12	Jun 12	Sep 12	Dec 12
Considerably higher	0	0	0	0
Somewhat higher	19	5	10	14
Same	71	76	71	76
Somewhat lower	10	19	19	10
Considerably lower	0	0	0	0
Total	100	100	100	100

Source: HKMA.

Household exposure

Household loans [48] grew at a relatively solid pace by 6.6% in the second half of 2012, outpacing domestic credit expansion of 4.1%. Partly reflecting a more buoyant residential property market, mortgage lending expanded by 5.0% in the second half, following a 2.5% increase in the first half of 2012. As a result, the share of mortgage lending to total domestic loans edged up to 23.0%. Other types of household lending, such as credit cards and other loans for private purposes, also registered a noticeable pick-up in growth (Table 5.B). With household debt growth outpacing that of household income, the household debt burden has further increased. The potential risk of this trend to the banking sector should be closely monitored.

Table 5.B
Half-yearly growth of loans to households of all AIs

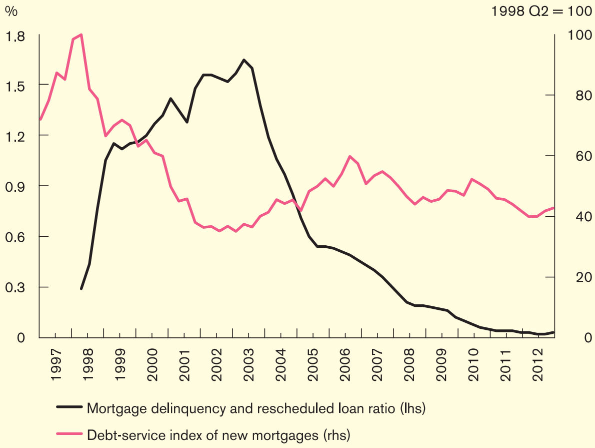
item	2009		2010		2011		2012	
(%)	H1	H2	H1	H2	H1	H2	H1	H2
Mortgages	1.7	5.6	5.1	8.6	5.5	1.2	2.5	5.0
Credit cards	-9.6	5.7	-0.9	17.9	-1.4	15.9	-1.6	16.6
Other loans for private purposes	-8.1	8.9	7.9	6.6	9.4	3.6	5.0	9.3
Total loans to households	-0.8	6.1	5.1	8.9	5.6	2.7	2.6	6.6

Source: HKMA.

48 Loans to households constitute lending to professional and private individuals, excluding lending for other business purposes. Mortgage lending accounts for a major proportion of household loans, while the remainder comprises mainly unsecured lending through credit card lending and other personal loans for private purposes. At the end of 2012, the share of household lending in domestic lending was 31%.

While the delinquency and rescheduled loan ratio of banks' mortgage portfolios and the number of bankruptcy petitions both stayed at relatively low levels (Charts 5.12 and 5.13), the risk of a property-price bubble against the background of an extended period of loose global liquidity continues to overshadow the banking system.

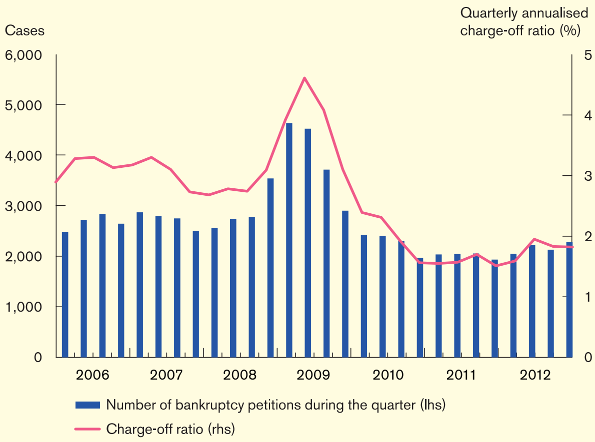
Chart 5.12
Delinquency ratio of banks' mortgage portfolios and household debt-service burden in respect of new mortgages



Note: The calculation of the index is based on the average interest rate for BLR-based mortgages.

Sources: HKMA and staff estimates.

Chart 5.13
Charge-off ratio for credit card lending and bankruptcy petitions



Sources: Official Receiver's Office and HKMA.

It is worth noting that the debt-service burden for new mortgages deteriorated during the second half of 2012, albeit slightly, due to an increase in loan size whilst household income remained steady. This took place even with interest rates staying at their extraordinary low levels. The HKMA will continue to monitor developments in the mortgage market and introduce appropriate measures with a view to safeguarding banking stability [49]. Box 5 empirically shows that the supply of mortgage loans has been constrained by loan-to-value caps and the lower supply has been translated into lower loan growth effectively. The policy effect has helped prevent excessive household leverage and overextension of credit to marginal borrowers so that the quality of banks' mortgage loan portfolios can be maintained.

Corporate exposure [50]

Domestic loans to corporations [51] grew at a slightly slower pace of 3.0% in the second half of 2012, after a 3.3% increase in the first half. At the end of the year, corporate loans accounted for 68.6% of domestic lending. A number of indicators suggest a steady credit risk environment for banks' corporate lending. The number of compulsory winding-up orders of companies only increased slightly to 158 in

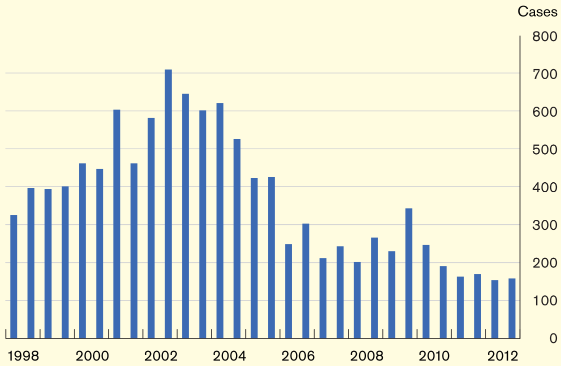
49 On 22 February 2013, the HKMA introduced a new round of prudential supervisory measures on property mortgage business to strengthen banks' risk management and resilience. The measures imposed a higher mortgage rate increase assumption in stress-testing mortgage applicants' repayment ability and a lower maximum loan-to-value ratio. For details, see HKMA press release "Prudential Supervisory Measures for Mortgage Lending" issued on the same date.

50 Excluding interbank exposure.

51 Loans to corporations comprise domestic lending except lending to professional and private individuals.

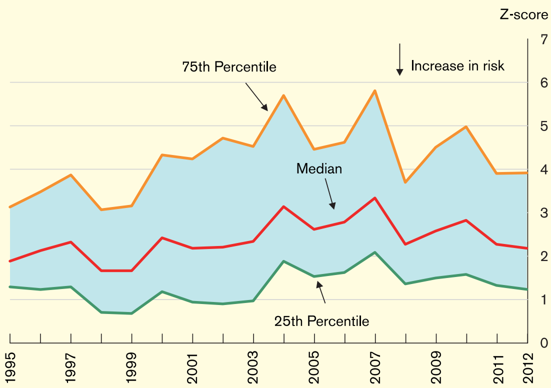
the second half of 2012, from 154 in the first half (Chart 5.14), while the Altman's Z-score [52] remained stable (Chart 5.15).

Chart 5.14
Number of winding-up orders of companies



Source: Official Receiver's Office.

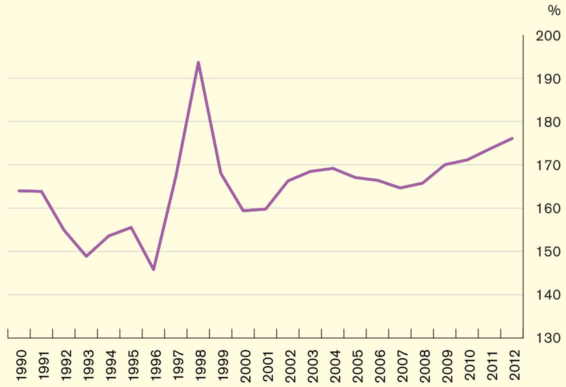
Chart 5.15
Altman's Z-score: A bankruptcy risk indicator of listed non-financial companies



Note: A lower Z-score indicates a higher likelihood of a company default.
Source: HKMA staff estimates based on data from Bloomberg.

However, the leverage ratio of the corporate sector has been on the increase in recent years, reaching 1.76 in 2012, the highest level since the Asian financial crisis (Chart 5.16). The potential risks of this trend on local banks should be closely monitored.

Chart 5.16
Leverage ratio of listed non-financial companies in Hong Kong



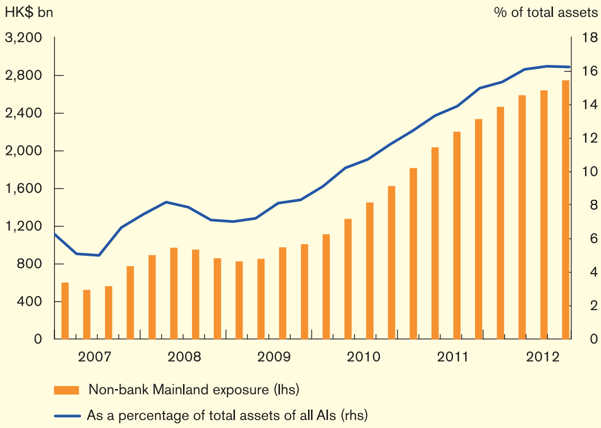
Notes:
1. The leverage ratio is defined as the ratio of total assets to shareholders' funds.
2. A higher value indicates a higher leverage.
3. The figure for 2012 is based on data as of June 2012.
Source: HKMA staff estimates based on data from Bloomberg.

[52] Altman's Z-score is a credit risk measure based on accounting data. It is a typical credit risk measure to assess the health of the corporate sector based on an array of financial ratios reported in companies' financial statements. The accounting ratios used to derive the Z-score are working capital/total assets, retained earnings/total assets, earnings before interest and taxes/total assets, market value of equity/book value of total liabilities, and sales/total assets.

Mainland exposure

The credit exposure of the domestic banking sector to Mainland-related business continued to expand further. The total non-bank Mainland exposure of all AIs reached HK$2,738 billion (16.2% of total assets) at the end of 2012, from HK$2,582 billion (16.1% of total assets) six months earlier (Chart 5.17). Of this, retail banks' non-bank Mainland exposure [53] rose to HK$1,777 billion (16.5% of total assets) from HK$1,717 billion (16.8% of total assets).

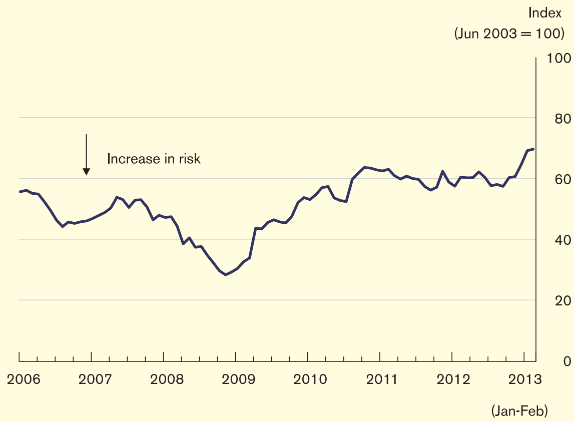
Chart 5.17
Non-bank Mainland exposure of all AIs



Note: Figures include exposure booked in AIs' banking subsidiaries in Mainland China.
Source: HKMA.

Consistent with signs of a bottoming-out in the Mainland economy, the overall credit quality of the Mainland's corporate sector appeared to have improved, as suggested by its aggregate distance-to-default index [54] which increased tangibly during the second half of 2012 (Chart 5.18).

Chart 5.18
Distance-to-default index for the Mainland corporate sector



Note: Distance-to-default index is defined as the simple average of the distance-to-default values of non-financial constituent companies (i.e. excluding investment companies and those engaged in banking, insurance and finance) of the Shanghai Stock Exchange 180 A-share index.
Source: HKMA staff estimates.

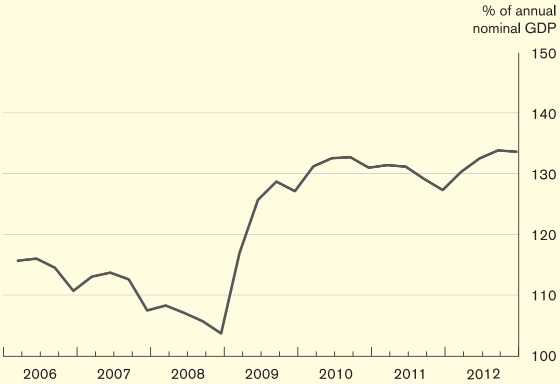
While a substantial share of the non-bank Mainland exposure is backed by guarantees or collateralised, banks should remain vigilant about the credit risk management of their Mainland-related exposure in view of concerns over the relatively high level of credit-to-GDP ratio on the Mainland (Chart 5.19), the recent

[53] Including exposure booked in retail banks' banking subsidiaries in Mainland China.

[54] The distance-to-default is a market-based default risk indicator based on the framework by R. Merton (1974), "On the pricing of corporate debt: the risk structure of interest rates", *Journal of Finance*, Vol. 29, pages 449 – 470, in which equity prices, equity volatility, and companies' financial liabilities are the determinants of default risk. In essence, it measures the difference between the asset value of a firm and a default threshold in terms of the firm's asset volatility.

increase in the amount of non-performing loans in the Mainland's banking system (Chart 5.20) and the potential risks of the shadow banking system on the Mainland. [55]

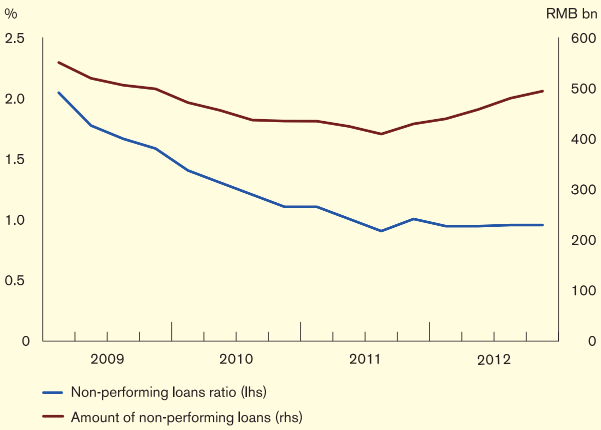
Chart 5.19
Credit-to-GDP ratio in Mainland China



Note: Credit-to-GDP ratio is defined as the ratio of claims on private sector to the sum of quarterly nominal GDP for the latest four quarters.

Sources: IMF International Financial Statistics and CEIC.

Chart 5.20
Non-performing loans in Mainland China

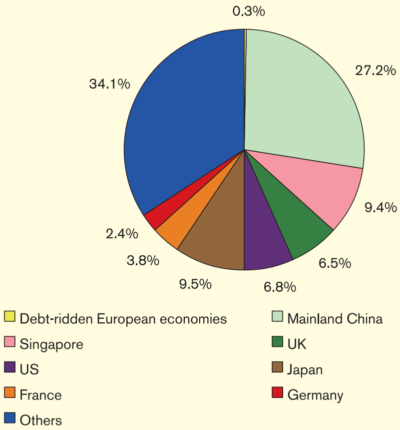


Source: China Banking Regulatory Commission.

Impact of the European sovereign debt crisis

While recent policies have reduced the tail risk of the European sovereign debt crisis, downside risks to economic growth remained. [56] Thus, the performance of local banks will continue to be affected by the evolution of the debt crisis and fiscal issues. Given that the exposure of the Hong Kong banking sector to banks in the UK, France and Germany is not immaterial (Chart 5.21), and these banks in turn have significant exposure to the more debt-ridden European economies, the possible contagion risk and its implications for banks in Hong Kong merit close attention.

Chart 5.21
External claims of the Hong Kong banking sector on major economies (all sectors) at the end of 2012



Note: Debt-ridden European economies refer to Greece, Ireland, Italy, Portugal and Spain.

Source: HKMA.

55 Shadow banking refers to credit intermediation involving entities and activities outside the regular banking system. The potential risks of shadow banking on the Mainland have aroused concerns recently. For example, see Xiao Gang "Regulating shadow banking", *China Daily*, 12 October 2012. For more discussions about the potential risks of shadow banking, please refer to Financial Stability Board's *Global Shadow Banking Monitoring Report 2012*.

56 For details, please refer to Section 2.2 of the report.

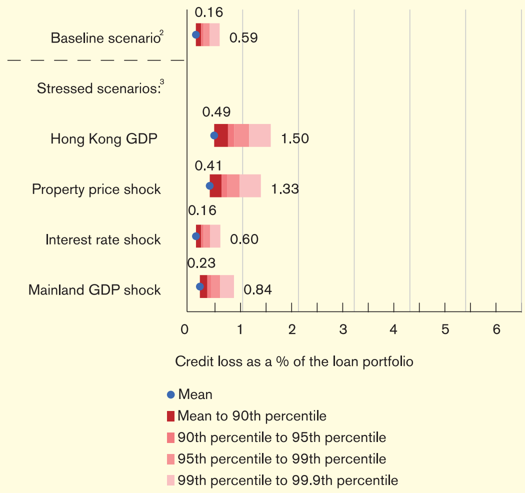
Macro stress testing of credit risk [57 & 58]

Results of the latest macro stress testing on retail banks' credit exposure suggest that the Hong Kong banking sector remains resilient and should be able to withstand rather severe macroeconomic shocks, similar to those experienced during the Asian financial crisis.

Chart 5.22 presents the simulated future credit loss rate of retail banks in the fourth quarter of 2014 under four specific macroeconomic shocks [59] using information up to the fourth quarter of 2012. The expected credit losses for retail banks' aggregate loan portfolios two years after the different hypothetical macroeconomic shocks are estimated to be moderate, ranging from 0.16% (interest rate shock) to 0.49% (Hong Kong GDP shock).

Taking account of tail risk, banks' maximum credit losses (at the confidence level of 99.9%) under the stress scenarios range from 0.6% (interest rate shock) to 1.5% (Hong Kong GDP shock), which are significant, but smaller than the loan loss of 4.39% following the Asian financial crisis.

Chart 5.22
The mean and value-at-risk statistics of simulated credit loss distributions[1]



Notes:

1. The assessments assume the economic conditions in 2012 Q4 as the current environment. The Monte Carlo simulation method is adopted to generate the credit loss distribution for each scenario.
2. Baseline scenario: no shock throughout the two-year period.
3. Stressed scenarios:

   Hong Kong GDP shock: reductions in Hong Kong's real GDP by 2.3%, 2.8%, 1.6%, and 1.5% respectively in each of the four consecutive quarters starting from 2013 Q1 to 2013 Q4.

   Property price shock: Reductions in Hong Kong's real property prices by 4.4%, 14.5%, 10.8%, and 16.9% respectively in each of the four consecutive quarters starting from 2013 Q1 to 2013 Q4.

   Interest rate shock: A rise in real interest rates (HIBORs) by 300 basis points in the first quarter (i.e. 2013 Q1), followed by no change in the second and third quarters and another rise of 300 basis points in the fourth quarter (i.e. 2013 Q4).

   Mainland GDP shock: Slowdown in the year-on-year annual real GDP growth rate to 4% in one year.

Source: HKMA staff estimates.

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57 Macro stress testing refers to a range of techniques used to assess the vulnerability of a financial system to "exceptional but plausible" macroeconomic shocks. Details of the model adopted in this exercise can be found in J. Wong et al. (2006), "A framework for stress testing banks' credit risk", *Journal of Risk Model Validation*, Vol. 2(1), pages 3 - 23. An updated framework is used for the current estimations.

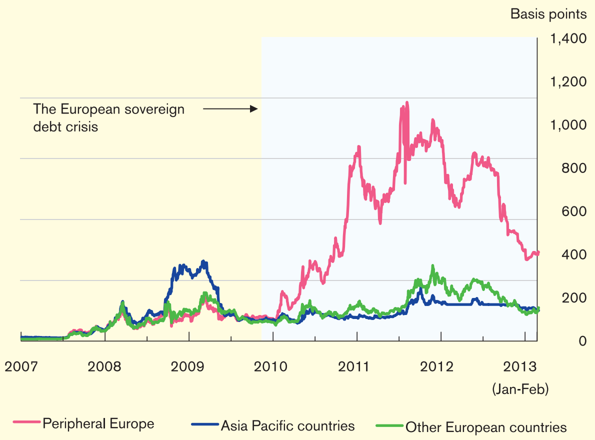
58 All estimates of credit loss for the overall loan portfolio of Hong Kong banks presented in this report are based on a revised stress testing framework. They are not strictly comparable to those estimates from the past framework that appeared in previous reports due mainly to different definitions of credit losses in these two frameworks. Specifically, credit losses in two years after any shock under the revised framework are measured by the estimated specific provision ratio at the end of the second year plus 50% of the estimated specific provision ratio at the end of the first year after the shock, while credit loss estimates from the past framework are derived based on an estimated delinquency ratio at the end of the second year multiplied by a loss-given-default estimate, which is determined by the simulated property price change over the two-year horizon.

59 These shocks are calibrated to be similar to those that occurred during the Asian financial crisis, except the Mainland China GDP shock.

5.5 Systemic risk to the banking system

While the credit default swap spreads for European banks narrowed notably during the review period, the spreads remained well above the levels prevailing prior to the onset of the European sovereign debt crisis. Meanwhile, the corresponding spreads for Asian banks continued to stay at low levels (Chart 5.23).

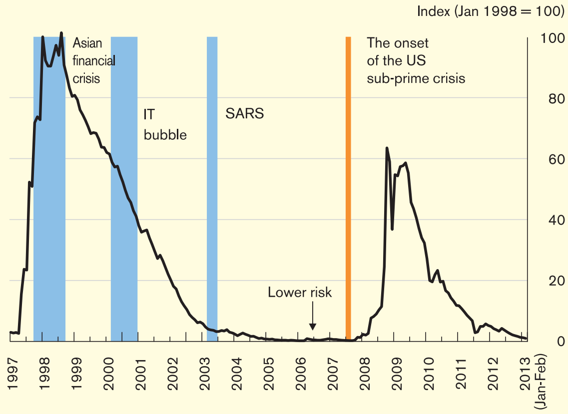
Chart 5.23
Credit default swap spreads of banks in Europe and Asia



Notes:
1. Median of five-year credit default swap spreads of the respective groups.
2. Peripheral Europe includes Greece, Ireland, Italy, Portugal and Spain.
Source: Bloomberg.

In Hong Kong, the banking distress index, a market-based systemic risk indicator for the local banking sector, fell further to 1 in February 2013 from 2.6 in August 2012 (Chart 5.24), indicating that the risk of contagion in the banking system remained insignificant and the probability of an occurrence of multiple bank defaults is small. This optimistic market view was broadly consistent with the latest assessment result of the composite early warning system [60], which estimated that the banking distress probability remained within the range of the low fragility category, suggesting that the banking sector continued to be stable and resilient. [61]

Chart 5.24
The banking distress index



Source: HKMA staff estimates based on data from Bloomberg.

[60] The composite early warning system is designed to estimate banking distress probability based on 10 leading indicators. These include macroeconomic fundamentals, currency crisis vulnerability, default risk of banks and non-financial companies, asset price misalignments, credit growth, and the occurrence of banking distress in other Asia-Pacific economies. For details, see J. Wong et al. (2010), "Predicting banking distress in the EMEAP economies", *Journal of Financial Stability*, Vol. 6(3), pages 169-179.

[61] The composite early warning system is a four-level risk rating system. A. Demirgüc-Kunt and E. Detragiache (2000), "Monitoring Banking Sector Fragility: A Multivariate Logit Approach", *World Bank Economic Review*, Vol.14(2), pages 287-307, has been followed in the selection of the upper bounds of each of the four fragility classes so that type I error associated with the bounds are 10%, 30%, 50% and 100% respectively.

The recent financial crisis has highlighted the important role of global banks in the transmission of shocks across banking sectors in different economies. Box 6 assesses how US and European banks have adjusted the business models of their Hong Kong branches after the 2008-09 global financial crisis. The result shows that these adjustments are likely to produce two different opposing effects on shock transmissions. The favourable impact sees them becoming less prone to drastic withdrawal of funds by their head offices during crises than before, due to the shift of some of these branches from operating traditionally as regional funding centres of global banks to performing as their regional lending units. Counteracting this are the more adverse impacts of any given withdrawal of funds due to the greater reliance of the branches on intra-group funding to fund their lending activities in the region.

Key performance indicators of the banking sector are provided in Table 5.C.

Table 5.C
Key performance indicators of the banking sector [1] (%)

	Dec 2011	Sep 2012	Dec 2012
Interest rate			
1-month HIBOR fixing [2] (quarterly average)	0.24	0.30	0.28
3-month HIBOR fixing (quarterly average)	0.31	0.40	0.40
BLR [3] and 1-month HIBOR fixing spread (quarterly average)	4.76	4.70	4.72
BLR and 3-month HIBOR fixing spread (quarterly average)	4.69	4.60	4.60
Composite interest rate [4]	0.53	0.38	0.32
		Retail banks	
Balance sheet developments [5]			
Total deposits	2.9	3.2	3.1
Hong Kong dollar	3.0	4.9	3.5
Foreign currency	2.8	1.1	2.8
Total loans	0.3	0.7	2.9
Domestic lending [6]	−1.5 [r]	0.4	2.9
Loans for use outside Hong Kong [7]	10.1 [r]	2.2 [r]	3.0
Negotiable instruments			
Negotiable certificates of deposit (NCD) issued	5.4	−7.7	−2.8
Negotiable debt instruments held (excluding NCD)	2.3	3.6	6.9
Asset quality [8]			
As a percentage of total loans			
Pass loans	98.28	98.19	98.16
Special mention loans	1.13	1.31	1.36
Classified loans [9] (gross)	0.59	0.50	0.47
Classified loans (net) [10]	0.34	0.30	0.31
Overdue > 3 months and rescheduled loans	0.49	0.42	0.37
Profitability			
Bad debt charge as percentage of average total assets [11]	0.04 [r]	0.02	0.04
Net interest margin [11]	1.24	1.37	1.36
Cost-to-income ratio [12]	46.6 [r]	44.9	45.6
Liquidity ratio (quarterly average)	38.0	40.9	42.6
		Surveyed institutions	
Asset quality			
Delinquency ratio of residential mortgage loans	0.01	0.01	0.02
Credit card lending			
Delinquency ratio	0.19	0.21	0.20
Charge-off ratio – quarterly annualised	1.51	1.83 [r]	1.82
– year-to-date annualised	1.49	1.75 [r]	1.70
		All locally incorporated AIs	
Capital adequacy ratio (consolidated)	15.8	16.1	15.7

Notes:

1. Figures are related to Hong Kong office(s) only except where otherwise stated.
2. The Hong Kong dollar Interest Settlement Rates are released by the Hong Kong Association of Banks.
3. With reference to the rate quoted by The Hongkong and Shanghai Banking Corporation Limited.
4. The composite interest rate is a weighted average interest rate of all Hong Kong dollar interest-bearing liabilities, which include deposits from customers, amounts due to banks, negotiable certificates of deposit and other debt instruments, and Hong Kong dollar non-interest-bearing demand deposits on the books of banks. Further details can be found in the HKMA website.
5. Quarterly change.
6. Loans for use in Hong Kong plus trade finance.
7. Including “others” (i.e. unallocated).
8. Figures are related to retail banks’ Hong Kong office(s) and overseas branches.
9. Classified loans are those loans graded as “substandard”, “doubtful” or “loss”.
10. Net of specific provisions/individual impairment allowances.
11. Year-to-date annualised.
12. Year-to-date figures.

r Revised figure.

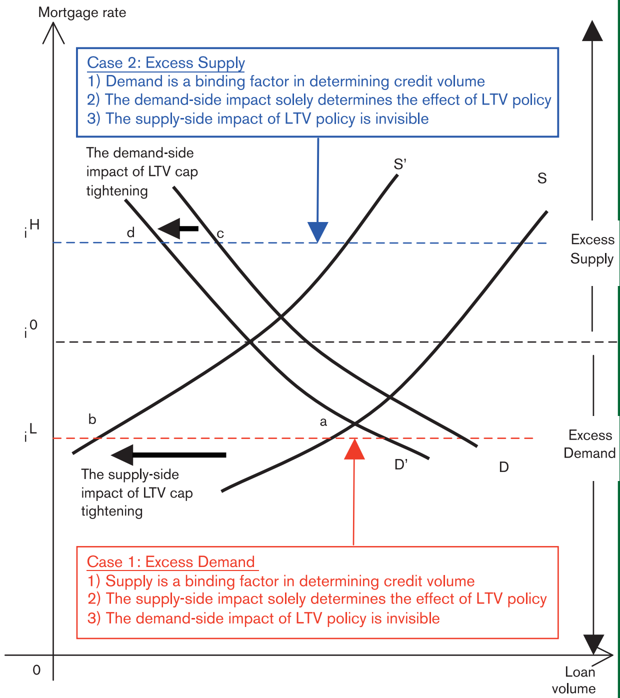
Box 5
The demand for and supply of mortgage loans: The role of loan-to-value policy

Introduction

One key question for the operation of loan-to-value (LTV) policy is under what market conditions LTV cap tightening is expected to be more effective in limiting credit growth. Theoretically, answering this question requires an examination of two issues: First, to what extent would the LTV cap tightening reduce the demand for and supply of mortgage loans?[62] Second, in the current state of the loan market, does the demand or supply play the major role in determining the credit volume? The second issue is particularly relevant in view of findings in banking research that excess demand or excess supply may occur in the credit market[63], suggesting that either the demand or supply can be the sole binding factor in determining the credit volume.

To see the importance of these two issues to the effectiveness of LTV policy, consider a hypothetical mortgage market where LTV cap tightening significantly reduces the credit supply but less so the credit demand. Chart B5.1 illustrates that the tightening shifts the demand from D to D′ moderately and supply from S to S′ more significantly. Although the magnitude of the shift in supply and that in demand play roles in determining the policy effect, the state of the market (i.e. whether the supply or demand is the binding factor) is a pivotal factor. Specifically, in Case 1 where demand exceeds supply (implying credit supply is the binding factor) at the prevailing mortgage interest rate (i^L), the effect of the tightening solely reflects the supply-side impact, while the demand-side impact is invisible. In this case, the loan volume decreases considerably from *a* to *b*. In Case 2 where supply exceeds demand at the prevailing mortgage interest rate (i^H), the effect of the tightening solely reflects the demand-side impact, while the supply-side impact is invisible. The loan volume decreases marginally from *c* to *d*. In this example, LTV policy is expected to be more effective when there is excess credit demand but less so when excess credit supply occurs, suggesting a state-dependent feature of the policy effect.

Chart B5.1
A supply-and-demand diagram to illustrate the effect of LTV policy under scenarios of excess supply and excess demand in loan markets



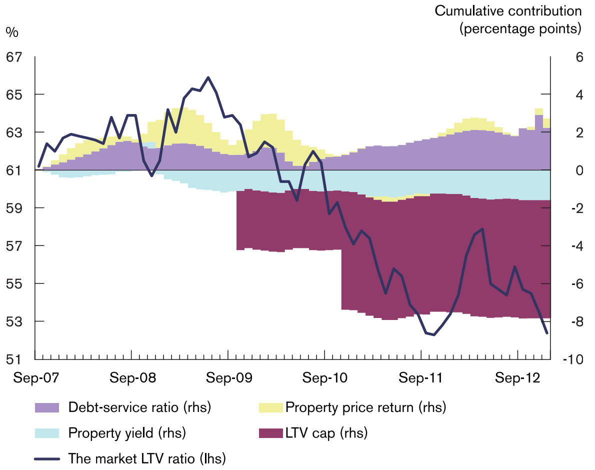
62 Theoretically, LTV cap tightening may reduce demand for mortgages, as home buyers may be forced out of the property market because of higher liquidity hurdles or lower returns on equity for property investment. LTV cap tightening may also reduce credit supply because it may lead banks to lend less than they otherwise would.

63 For example, see Stiglitz and Weiss (1981), "Credit rationing in markets with imperfect information", *American Economic Review*, vol. 71, pp 393-410. Apart from the conventional explanation that excess supply or excess demand may occur due to stickiness of lending interest rates, Stiglitz and Weiss (1981) show theoretically that credit rationing (i.e. excess demand) may exist in the loan market if banks face an adverse selection problem. A profit-maximising bank may charge an interest rate below the market clearing rate, as a higher interest rate could attract more risky borrowers and discourage safer borrowers, which could increase the credit loss of banks' loan portfolios.

One important implication of the possible state-dependent feature of the policy effect is that an empirical identification of the impact of LTV policy on the demand for and supply of mortgage loans, and the state of the market could help policymakers to assess under what market conditions, LTV policy is more effective in restraining credit growth.

To advance our understanding of the transmission mechanism of LTV policy in such context, this article develops an empirical model of residential mortgage lending in Hong Kong, which allows for, but does not impose, the existence of excess supply or excess demand in the loan market. The average LTV ratio of new mortgages approved (hereafter referred to as "the market LTV ratio") is considered as one major factor affecting both the demand for and supply of mortgage lending. With this specification, any LTV cap tightening or loosening is assumed to have an initial impact on the market LTV ratio, which in turn affects both the demand for and supply of mortgage loans. This assumption is justified by a regression-based decomposition analysis, which shows that LTV caps are one significant determinant of the market LTV ratio (Chart B5.2).

Chart B5.2
Contributions of main factors to change in the market LTV ratio



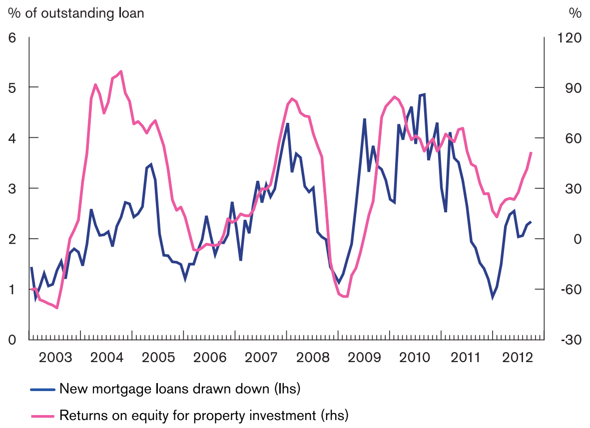
Note: The decomposition is based on the result of a regression model, which suggests that a higher LTV cap, a higher property price return to volatility, a higher rental yield for property investment, and a lower debt-servicing ratio tend to be associated with a higher market LTV ratio.

Sources: R&VD, C&SD and HKMA staff estimates.

The econometric model of mortgage demand and supply

Table B5.1 presents the specification for demand and supply equations for mortgage loans. The demand for mortgage loans is hypothesised to be correlated negatively with unemployment rates (to proxy for macroeconomic conditions) and positively with returns on equity (ROE) for property investment. A lower ROE (due either to a lower market LTV ratio, declines in property price appreciations and rental yields or an increase in mortgage interest rates) is expected to reduce the demand for mortgages. The strong historical co-movement of ROE and new mortgage loans drawn down (Chart B5.3) suggests that the ROE may have significant explanatory power on the demand for mortgages.

Chart B5.3
Returns on equity for property investment and new mortgage loans drawn down



Sources: R&VD and HKMA staff estimates.

As the Special Stamp Duty (SSD) introduced in November 2010 may reduce the demand for properties and thus the demand for mortgage loans, an interaction term of ROE and a dummy variable for capturing the effect of the SSD [64] is included in the model. The model also includes a dummy variable to account for lower demand for properties during the month of Chinese New Year.

64 Defined as one for monthly observations after November 2010 and zero otherwise.

Table B5.1
Major factors affecting the demand for and supply of mortgages

Variable	Expected impact
Demand equation	
Unemployment rate	–
Returns on equity for property investment: 1/(1–market LTV ratio)[1] ***times*** net property return (defined as 12-month property price return + property rental yield – effective borrowing rate for best lending rate-based mortgages)	+
An interactive term of a dummy variable for capturing the effect of the SSD and returns on equity for property investment	–
A dummy variable for Chinese New Year	–
Supply equation	
Annual growth rate of residential property prices	+
Annual change in the market LTV ratio	+
Risk-adjusted return on mortgage lending: Effective mortgage rate – Loss given default[2] ***times*** three-month delinquency ratio – The yield of 12-month Exchange Fund Bills	+
Available funds: Annual growth rate of Hong Kong dollar deposits	+

Notes:
1. It can be shown that 1/(1–market LTV ratio) equals the ratio of the property value to equity (i.e. the amount of down payments) for property investment.
2. Assuming a loss given default of 50%.

The supply equation postulates that banks tend to supply more mortgages when the collateral value increases. The collateral value in this model is assumed to be dependent on property prices and the market LTV ratio. The consideration of the collateral value as one factor driving the supply of mortgage loans is consistent with the assertion of the financial accelerator theory[65] that rises in property prices lead to higher collateral value, which in turn increases the supply of mortgage loans.

In addition, the supply of mortgage loans is assumed to be positively correlated with a net risk-adjusted return on mortgage lending (which is proxied by mortgage interest rates minus the expected default loss of mortgage lending minus the yield of 12-month Exchange Fund Bills) and deposit funding.

A preliminary estimation result of the model is found to be broadly consistent with the specification. In particular, the market LTV ratio is found to be a significant factor affecting both the demand for and supply of mortgage loans. The estimation result also suggests that demand does not necessarily equal supply at the prevailing market interest rate.

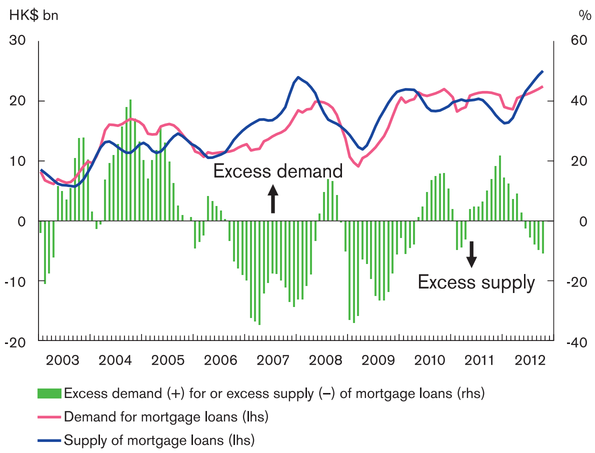
Regarding the extent to which the LTV cap tightening after October 2009 reduced the supply of and demand for mortgage loans, a back-of-the-envelope calculation using the preliminary estimation result suggests that had the HKMA not tightened LTV caps, the supply of mortgage loans might be around 10% more than the current estimate. By contrast, the policy effect on the demand for mortgage loans is estimated to be relatively small.

In order to evaluate whether the significant dampening impact on the supply of mortgage loans was effectively translated into lower

[65] See Bernanke (2007), "The Financial Accelerator and the Credit Channel," Speech at the Credit Channel of Monetary Policy in the Twenty-first Century Conference, Federal Reserve Bank of Atlanta.

loan growth, we need to assess the state of the market. Chart B5.4, which presents the estimated mortgage demand and supply, reveals that since the beginning of the tightening of macroprudential policy in October 2009, the number of months with estimated excess demand is more than that with estimated excess supply, suggesting that credit supply is a major factor in determining the volume of new mortgage loans. In other words, LTV policy was effectively transmitted to the mortgage loan market through its dampening impact on the supply of mortgage loans.

Chart B5.4
Estimated demand for and supply of mortgage loans



Note: Excess demand or supply is expressed as a percentage of the estimated new mortgage loans drawn down. The estimated demand and supply are expressed as three-month moving averages.

Source: HKMA staff estimates.

Conclusion

On the theoretical front, this analysis shows that the effect of LTV policy on loan growth may be state-dependent because of asymmetric responsiveness of loan demand and supply to LTV ratios. Therefore, analysing the relative forces of credit demand and supply is important when conducting macroprudential policy.

Empirically, this analysis shows that the supply of mortgage loans has been constrained by the LTV ratios and the lower supply has been translated into lower loan growth effectively since late 2009. The policy effect helps to prevent excessive household leverage and over-extension of credit to marginal borrowers so that the quality of banks' mortgage loan portfolios can be maintained. In principle, constraining the supply of mortgage loans may also help dampen the amplitude of property price cycles to a certain extent because if the demand for mortgage loans had been fully satisfied by banks, then upward pressures on property prices may have been even higher. These policy actions have shown that managing the quantity of leverage in the system has contributed to financial stability in Hong Kong.

Box 6
Changing business models of Hong Kong branches of US and European global banks

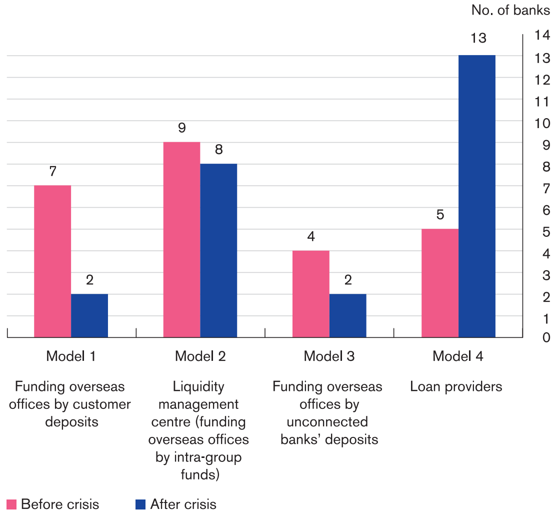
Most global banks have significant operations in Hong Kong[66], suggesting that any shock in their home countries could spread internationally in part through their operations in Hong Kong. Global banks' business models, as revealed from the recent research, play a fundamental role in determining how the risk would be transmitted.[67] Against this background, this article assesses how US and European banks, which were hard hit in the 2008-09 global financial crisis, have adjusted the business models of their Hong Kong branches after the crisis[68], and implications for the risk transmission mechanism.

An overview

The assessment is based on financial disclosure of 25 selected overseas incorporated Hong Kong licensed banks in pre- and post-crisis periods.[69] The sample banks consist of branches of US and European global banks that have significant operations in Hong Kong. Twenty-one of them are branches of global systemically important banks (G-SIBs) identified by the Financial Stability Board.[70] As at June 2012, the aggregate assets of these 25 selected banks accounted for 17% of the total assets of the Hong Kong banking sector.

The 25 selected banks are broadly classified into four business models by their major sources and utilisation of funds. Chart B6.1 shows the distribution of these banks by business models before and after the crisis.[71]

Chart B6.1
Distribution of Hong Kong branches of US and European global banks by business models



Sources: Classification by HKMA staff based on banks' financial disclosure statements.

Banks under models 1-3 all served to provide funding for their overseas offices but differed in their major funding sources, whereas banks under model 4 served to provide loans to non-bank customers domiciled both in Hong Kong and other jurisdictions of the Asia-Pacific region. Before the crisis, liquidity management was the principal function of the Hong Kong branches of global

66 At the end of 2012, 46 out of the world's largest 50 banks (in terms of asset size) are authorized institutions or have local representative offices in Hong Kong. From a stability perspective, 27 out of the 28 global systemically important banks (G-SIBs) identified by the Financial Stability Board have operations in Hong Kong.

67 Cetorelli and Goldberg (2012), "Liquidity management of US global banks: Internal capital markets in the great recession", Journal of International Economics, pp 299-311.

68 Global banks' subsidiaries in Hong Kong are not included in this assessment, as their business models are similar (i.e. to fund local lending by local retail deposits) and remain broadly unchanged after the crisis.

69 The financial disclosure statements of the selected banks reflect the operation of their branches in Hong Kong. Banks' pre-crisis and post-crisis positions are taken from interim or final financial disclosure statements 2007 (June 2008 for one exception) and those in June 2012 respectively.

70 Among the 28 G-SIBs, 24 are US and European banks. The remaining four banks, which are excluded from this analysis, are in Japan and China. See Financial Stability Board (2012), "Update of group of global systemically important banks".

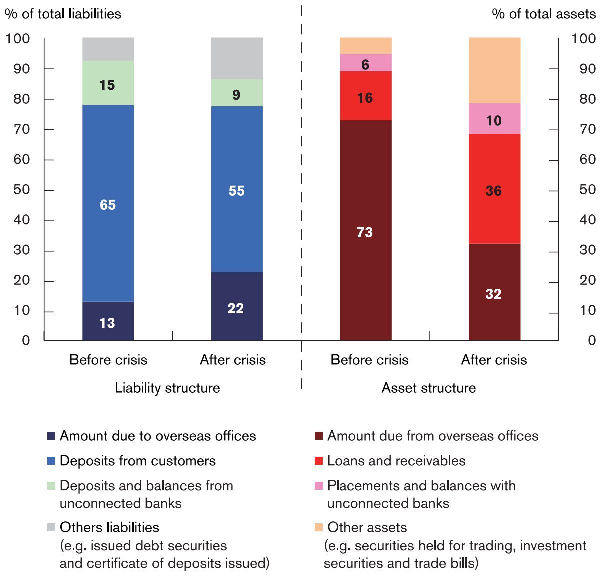
71 The classification, however, is not perfectly precise because some banks actually operated with multiple functions (e.g. a bank may have sizeable operations of both lending and funding overseas offices).

banks, as 20 out of the 25 selected banks operated with models 1-3. After the crisis, however, lending to non-bank customers has become increasingly important, with 13 sample banks adopting model 4. The shift of the principal functions of the Hong Kong branches of these global banks reflects there were significant changes in the asset-liability structure, as analysed below.

Business model 1: Funding overseas offices by customer deposits

Chart B6.2 shows the asset-liability structure for those sample banks that adopted model 1 before the crisis.[72] Although customer deposits remained the major source of funds after the crisis, its share has declined. The gap was nearly filled by an increase in intra-group borrowings. The asset side underwent dramatic changes. The share of lending to overseas offices decreased from 73% to 32%, while that of lending to non-bank customers increased from 16% to 36%. As a result, lending to non-bank customers has become the primary activity after the crisis. Indeed, five of the seven banks in this group have transformed into a lending arm of their respective banking groups (i.e. model 4) after the crisis.

Chart B6.2
Asset-liability structure: Business model 1

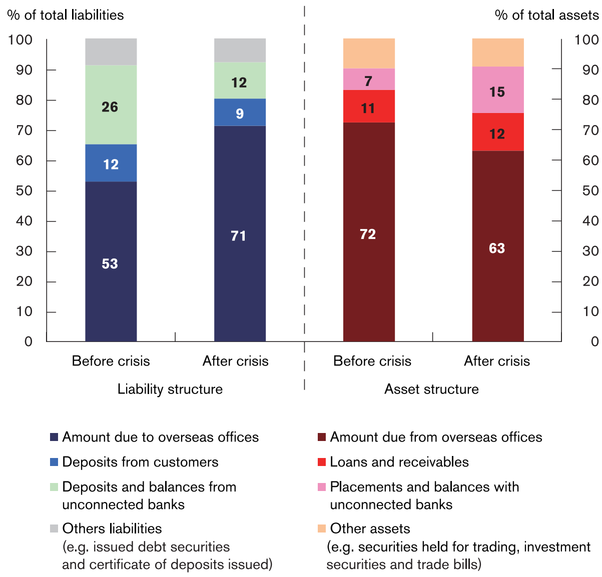


Sources: Banks' financial disclosure statements and HKMA staff estimates.

Business model 2: Liquidity management centre

The business model of these banks remained broadly unchanged after the crisis (Chart B6.3), with six out of the nine banks in this group maintaining a similar business model after the crisis. Nevertheless, moderate adjustments in the asset-liability structure were observed. In particular, intra-group funding became even more important after the crisis, with its share in total liabilities increasing further from 53% to 71%. On the asset side, distributing intra-group funding remained the core activity after the crisis, despite growing shares of lending to non-bank customers and unconnected banks.

Chart B6.3
Asset-liability structure: Business model 2



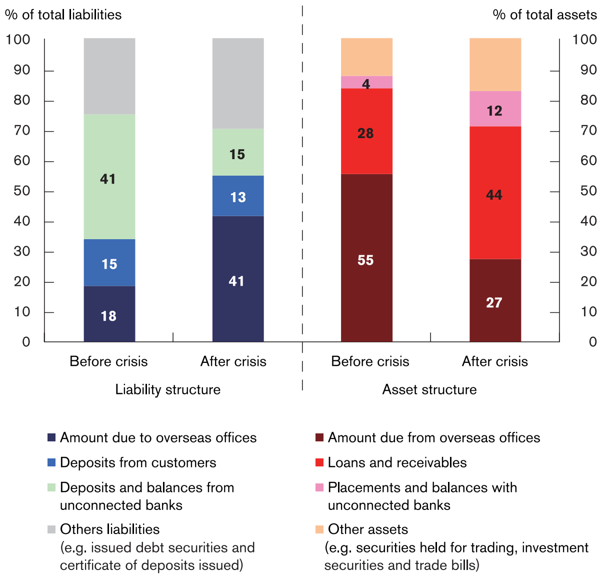
Sources: Banks' financial disclosure statements and HKMA staff estimates.

72 The analysis on the changes in the asset-liability structure of different business models and the construction of charts B6.2-B6.5 are based on the aggregate positions of banks adopting the corresponding models before the crisis, which does not preclude that the changes at individual bank level may differ from the aggregate level.

Business model 3: Funding overseas offices by unconnected banks’ deposits

Large changes were observed on both the asset and liability sides for those banks that adopted model 3 before the crisis (Chart B6.4). The principal funding source has shifted from unconnected banks’ deposits to intra-group funds after the crisis. On the asset side, lending to non-bank customers has replaced intra-group lending as the core activity after the crisis. It is worth noting that this model was not a mainstream before the crisis with only four sample banks adopting it, and this business model appears to have become even less viable with only two banks adopting it after the crisis.

Chart B6.4
Asset-liability structure: Business model 3

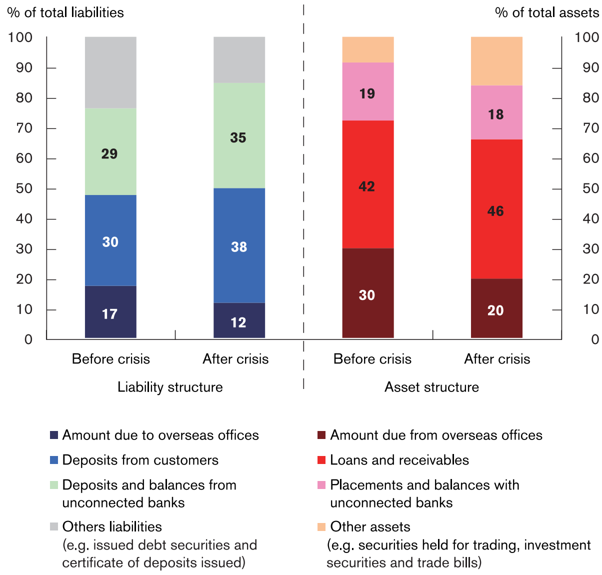


Sources: Banks’ financial disclosure statements and HKMA staff estimates.

Business model 4: Loan providers

The asset-liability structure of this model remained largely stable (Chart B6.5). In general, the liability structure of banks adopting model 4 before the crisis was broadly unchanged. On the asset side, the role of lending to non-bank customers has strengthened, with its share climbing to 46% from 42%. As shown in Chart B6.1, around half of the sample banks serve as a lending unit after the crisis.

Chart B6.5
Asset-liability structure: Business model 4



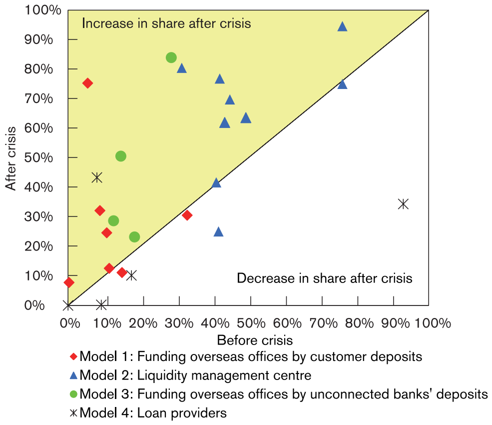
Sources: Banks’ financial disclosure statements and HKMA staff estimates.

Common patterns of changes in the asset-liability structure

Notwithstanding the heterogeneous asset-liability structure across the sample banks, some common developments after the crisis are observed. In general, the sample banks become more reliant on intra-group funding as a source

of funds (Chart B6.6) [73], which may be attributed to the surplus funds at the headquarters of these global banks after unprecedented liquidity injections by central banks in their home countries. [74]

Chart B6.6
Shares of amount due to overseas offices in total liabilities of sample bank branches

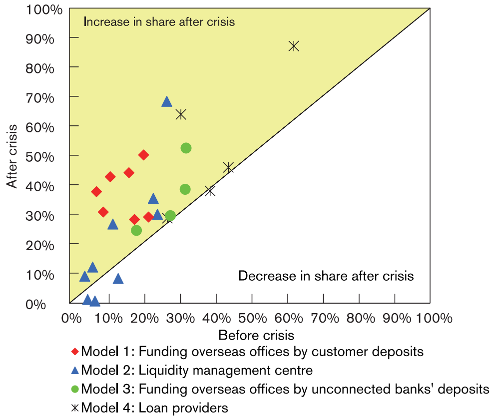


Notes:
1. Each data point represents one sample bank.
2. Data point above the diagonal indicates an increase in the share of amount due to overseas offices after the crisis.

Sources: Banks' financial disclosure statements and HKMA staff estimates.

On the asset side, lending to non-bank customers has gained in importance after the crisis (Chart B6.7) [75], which may be partly driven by the strong demand for bank credit in the Asia-Pacific region.

Chart B6.7
Share of loans to non-bank customers in total assets of sample bank branches



Notes:
1. Each data point represents one sample bank.
2. Data point above the diagonal indicates an increase in the share of loans to non-bank customers after the crisis.

Sources: Banks' financial disclosure statements and HKMA staff estimates.

Implications for the Hong Kong banking sector

The recent change in business models of Hong Kong branches of US and European global banks is likely to produce two counteracting effects on shock transmission associated with US and European global banks. On the one hand, the shift from traditional funding centres to regional lending units may suggest that their operations in Hong Kong would be less prone to drastic withdrawal of funds than before. Recent research revealed that in times of stress global banks are more likely to commit stable intra-group funding to overseas affiliates that carry out significant lending activities. [76] On the other hand, the greater reliance on intra-group funding to fund lending activities may suggest that any given withdrawal of funds by head offices of these global banks will tend to produce a larger impact on the credit supply of their Hong Kong branches than previously. Nevertheless, the overall impact on the domestic credit supply would be moderate given that lending by Hong Kong branches of these global banks only accounted for around 12% of total loans in the Hong Kong banking sector.

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73 Correspondingly, the shares of deposits from customers and unconnected banks in total liabilities have dropped, possibly due to the perceived higher counterparty risk of US and European banks.

74 For example, the two three-year longer term refinancing operations conducted by the European Central Bank have improved the funding conditions of European banks.

75 In contrast, the share of amount due from overseas offices in total assets has decreased.

76 See footnote 67.

Glossary of terms

Aggregate Balance

The sum of balances in the clearing accounts and reserve accounts maintained by commercial banks with the central bank. In Hong Kong, this refers to the sum of the balances in the clearing accounts maintained by the banks with the HKMA for settling interbank payments and payments between banks and the HKMA. The Aggregate Balance represents the level of interbank liquidity, and is a part of the Monetary Base.

Authorized Institution (AI)

An institution authorized under the Banking Ordinance to carry on the business of taking deposits. Hong Kong maintains a Three-tier Banking System, which comprises licensed banks, restricted licence banks and deposit-taking companies.

Best Lending Rate

A benchmark interest rate that banks use to price loans. In Hong Kong, the Best Lending Rate is used as a base for quoting interest rates on mortgage loans.

Certificates of Indebtedness (CIs)

Certificates issued by the Financial Secretary under the Exchange Fund Ordinance, to be held by note-issuing banks as cover for the banknotes they issue.

Composite Consumer Price Index (CCPI)

The headline consumer price index (CPI) for Hong Kong. The Census and Statistics Department compiles three separate CPI series relating to households in different expenditure ranges. The CPI(A) relates to about 50% of households in the relatively low expenditure range; the CPI(B) relates to the next 30% of households in the medium expenditure range; and the CPI(C) relates to the next 10% of households in the relatively high expenditure range. The Composite CPI is compiled based on the aggregate expenditure pattern of all of the above households taken together.

Composite Interest Rate

The composite interest rate is a weighted average interest rate of all Hong Kong dollar interest bearing liabilities, which include deposits from customers, amounts due to banks, negotiable certificates of deposit and other debt instruments, and Hong Kong dollar non-interest bearing demand deposits on the books of banks. Data from retail banks, which account for about 90% of the total customers' deposits in the banking sector, are used in the calculation. It should be noted that the composite interest rate represents only average interest expenses. There are various other costs involved in the making of a loan, such as operating costs (e.g. staff and rental expenses), credit cost and hedging cost, which are not covered by the composite interest rate.

Convertibility Undertaking

An undertaking by a central bank or currency board to convert domestic currency into foreign currency and vice versa at a fixed exchange rate. In Hong Kong, the HKMA operates Convertibility Undertakings on both the strong side and the weak side. Under the strong-side Convertibility Undertaking, the HKMA undertakes

to buy US dollars from licensed banks at 7.75. Under the weak-side Convertibility Undertaking, the HKMA undertakes to sell US dollars at 7.85. Within the Convertibility Zone between 7.75 and 7.85, the HKMA may choose to conduct market operations consistent with Currency Board principles with the aim of promoting the smooth functioning of the money and foreign exchange markets.

Convertibility Zone

The Hong Kong dollar-US dollar exchange rate band, defined by the levels of the strong- and weak-side Convertibility Undertakings, within which the HKMA may choose to conduct market operations consistent with Currency Board principles.

Exchange Fund Bills and Notes (EFBN)

Debt instruments issued by the HKMA for the account of the Exchange Fund. Introduced in March 1990, the Exchange Fund Bills and Notes programme has expanded over the years, with a maturity profile ranging from three months to 15 years. These instruments are fully backed by the foreign reserves. The HKMA has undertaken that new Exchange Fund paper will only be issued when there is an inflow of funds, thus enabling the additional paper to be fully backed by the foreign reserves. Since 1 April 1999, interest payments on Exchange Fund paper have been allowed to expand the Monetary Base. Additional Exchange Fund paper is issued to absorb such interest payments. This is consistent with the Currency Board discipline since interest payments on Exchange Fund paper are backed by interest income on the US dollar assets backing the Monetary Base.

Liquidity Ratio

All authorized institutions in Hong Kong are required to meet a minimum monthly average liquidity ratio of 25%. This is calculated as the ratio of liquefiable assets (e.g. marketable debt securities and loans repayable within one month subject to their respective liquidity conversion factors) to qualifying liabilities (basically all liabilities due within one month). The method of calculation and its components are specified in the Fourth Schedule to the Banking Ordinance.

Monetary Base

A part of the monetary liabilities of a central bank. The monetary base is defined, at the minimum, as the sum of the currency in circulation (banknotes and coins) and the balance of the banking system held with the central bank (the reserve balance or the clearing balance). In Hong Kong, the Monetary Base comprises Certificates of Indebtedness (for backing the banknotes issued by the note-issuing banks), government-issued currency in circulation, the balance of the clearing accounts of banks kept with the HKMA, and Exchange Fund Bills and Notes.

Nominal and Real Effective Exchange Rate (NEER and REER)

An indicator of the overall exchange rate value of the Hong Kong dollar against a basket of currencies of Hong Kong's principal trading partners. The nominal effective exchange rate (NEER) is a weighted average of the exchange rates between Hong Kong and its principal trading partners. The real effective exchange rate (REER) is obtained by adjusting the NEER for relative movements in the seasonally adjusted consumer price indices of those selected trading partners.

Abbreviations

3m moving average	Three-month moving average
3m-on-3m	Three-month-on-three-month
ASEAN	Association of Southeast Asian Nations
AIs	Authorized Institutions
BIS	Bank for International Settlements
bn	Billion
BLR	Best lending rate
BoP	Balance of Payments
BSD	Buyer's Stamp Duty
CCPI	Composite Consumer Price Index
CDs	Certificates of deposit
CEI	Composite index of coincident economic indicators
CIs	Certificates of Indebtedness
CNH	Offshore renminbi exchange rate in Hong Kong
CNY	Onshore renminbi exchange rate
C&SD	Census and Statistics Department
CPI	Consumer Price Index
CU	Convertibility Undertaking
EFBN	Exchange Fund Bills and Notes
Fed	Federal Reserve
GDP	Gross Domestic Product
G-SIBs	Global systemically important banks
HIBOR	Hong Kong Interbank Offered Rate
HKD	Hong Kong dollar
HKMA	Hong Kong Monetary Authority
HKTDC	Hong Kong Trade Development Council
HSCEI	Hang Seng China Enterprises Index
HSI	Hang Seng Index
IMF	International Monetary Fund
IPO	Initial Public Offering
LEI	Composite index of leading economic indicators
LIBOR	London Interbank Offered Rate
lhs	Left-hand scale
LTD	Loan-to-deposit

LTV	Loan-to-value
MDBs	Multilateral development banks
mn	Million
NCD	Negotiable certificates of deposit
NEER	Nominal effective exchange rate
NIE	Newly industrialised economies
NPL	Non-performing loan
OMTs	Outright Monetary Transactions
p.a.	Per annum
PBoC	People's Bank of China
PMI	Purchasing Managers' Index
QBTS	Quarterly Business Tendency Survey
qoq	Quarter-on-quarter
R&VD	Rating and Valuation Department
REER	Real effective exchange rate
rhs	Right-hand scale
RMB	Renminbi
SSD	Special Stamp Duty
S&P 500	Standard & Poor's 500 Index
UK	United Kingdom
US	United States
USD	US dollar
yoy	Year-on-year

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